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Flexible BBC Exchange Rate System and Exchange Rate Cooperation in East Asia

INTERNATIONAL ECONOMIC POLICY

Yen Kyun Wang

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Executive Summary

In order to prevent competitive depreciations, excessive inflows of foreign capital and crisis contagion in the region, cooperation in exchange rate and monetary policy is very desirable, considering the fact that countries in East Asia have high trade dependence among them and similar trade patterns with each other.

The BBC system proposed will be examined and the new BBC system will be suggested.

The BBC system is desirable as a new exchange rate system in Korea. Singapore has been successful with the BBC system since the early 1980s. It would be more desirable that East Asia adopt the flexible BBC (basket, band, crawl) exchange rate system jointly. Participating countries of East Asia including Japan link their exchange rates to their currency basket (ACU) with bands and the ACU is linked to the basket of the dollar and euro by a regional agency. It will stabilize real effective exchange rates of East Asian countries and reduce excessive short term capital flows into developing East Asian countries.

In addition to the above flexible BBC exchange rate system the U.S. and Japan can fix the yen/dollar exchange rate within a band in the short- and medium-run and fix the rate in the long-term. It will further reduce excessive capital inflows into developing countries in the region. Without stabilizing the yen/dollar exchange rate, interest rates of Japan will continue to be lower than those of the U.S. and emerging East Asian countries, and yen-carry trade and excessive capital inflows in

developing East Asia will appear when the expected exchange rate of the yen is uncertain or weak. And sudden outflow of short-term capital will follow later. The ACU is linked to the basket of the dollar and yen, and participating countries in the region link their exchange rates to the ACU with bands. The yen is included in the outside basket, but not in the regional basket in this alternative scheme. This scheme will stabilize exchange rates of emerging East Asian countries against the yen and dollar more effectively.

When they crawl their central rates within bands, real effective exchange rates (REERs) using unit labor cost indices need to be used to keep their export competitiveness constant.

Sound and consistent economic policies are essential for success of the BBC system. Singapore experiences with the BBC system provide good lessons. Prudential fiscal policy, flexible prices of goods and productive factors, proper interest policy and effective use of foreign reserves are needed. Joint or independent capital control could be helpful in the face of excessive capital inflows. Other measures for financial cooperation are discussed also.

국문요약

경쟁적 평가절하, 국가간 금리차이에서 일어나는 단기자본의 과잉유입과 인플레, 금융위기 재발을 방지하기 위해서는 동아시아 환율 및 통화 협력이 필수적이다. 본 연구는 동아시아에 적합한 새로운 신축적 BBC(통화바스켓, 밴드, 크롤)제도와 이를 지원하는 정책을 제안한다. 일본을 포함한 참여국들은 환율을 지역의 통화바스켓(아시아 통화단위: ACU)에 밴드를 두어 연결하고 ACU는 달러와 유로의 통화바스켓에 연결한다. 지역 통화 위기 시에 일본과 중국의 역할이 특히 중요하다.

동아시아 여러나라가 공동으로 BBC 제도를 채택하여 정책을 조정하면 효과적일 것이나 싱가포르처럼 우리나라가 독자적으로 채택하는 것도 바람직하다.

이 연구에서는 종래 제안된 것과 다른 바스켓을 제시하고, 임금상승률이 빠를 때에는 물가보다는 단위노동자수를 사용한 실질 실효환율 변동이 크롤방식에 반영되어야 함을 실증적으로 보여준다. 중심 실효환율에 일정한 밴드(예, ±10%)를 허용하여 환율이 변동하도록 허용하고, 투기세력이 클 때는 환율이 밴드 밖으로 움직이는 것을 허용한다. 협력 초기 단계에는 시장의 신뢰가 커질 때까지 밴드, 중심환율을 발표하지 않는 것이 좋다.

더욱 강력한 환율협력 방식은 단기와 중기에 달러와 엔 환율을 일정한 밴드 내로 고정시키고, 장기에는 일정 환율에 고정시켜 엔/달러 환율을 안정시키면서 양국간 금리차이를 적게 하는 것이다. 동아시아 개도국의 통화바스켓(ACU)은 달러와 엔의 바스켓에 연결하고 참여국들은 환율을 ACU에 밴드를 두어 연결한다. 엔은 역외 바스켓에 포함되고 역내 바스켓에는 포함되지 않는다. 이것은 미국, 일본과 동아시아 개도국들 간의 환율안정을 가져올 뿐만 아니라 엔에 대한 미국의 평가절상 압력과 엔캐리 트레이드를 방지한다. 동아시아의 경제개방과 개혁, 지역개발과 투자확대, 거시경제정책의 조정, 보유외환의 효과적인 활용 등을 통해 미국과 동아시아의 금융 불균형을 해소할 수 있다.

싱가포르의 BBC 제도의 경험은 좋은 교훈이 된다. 일관성 있고 건전한 정책, 정책의 투명성과 정책에 대한 시장의 신뢰, 신중한 금융·재정정책, 금융기관과

금융감독의 강화 등이 중요하다. 일정 범위 내에서 환율안정을 유지하기 위해서는 국내금리가 국제금리에 의해서 결정되도록 한다. 상품과 생산요소 가격의 신축성을 증가시키고 경기침체기에는 기업부담 경감을 위해 노력해야 하며, 상대적으로 취약한 국내 금융기관을 고려하여 과도한 해외 단기자본 유입이 있을 때에는 자본통제도 검토되어야 한다.

핵심단어: 환율협력, 자산 인플레이션, 통화바스켓, 엔캐리 청산

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Flexible BBC Exchange Rate System and Exchange Rate Cooperation in East Asia

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I. Introduction

Through large increases in trade and capital movement, the mutual dependence of the world's most dynamic East Asian nations (the 10 nations of ASEAN and Korea, China and Japan) has elevated rapidly. According to an agreement concluded in 2007, ASEAN will expand toward an economic community similar in form to the EU by 2015, and Korea, China and Japan have each either concluded an FTA or EPA with ASEAN or are expanding the terms of these agreements.

The conclusion of FTAs between Korea and China, and Korea and Japan is under research and review, and China and Japan announced plans in 2007 for a joint effort to strengthen economic cooperation between the two countries and within East Asia and this shows signs of

facilitating exchange rate and monetary cooperation. In addition, the rapid growth of China, India, Vietnam and Russia is also raising the degree of mutual dependence among East Asian economies. However, cooperation for exchange rate stability has become a vital issue as the continual increase of trade without exchange rate stability is difficult. The increase of economic cooperation may divert energies from exhausting regional conflicts over land, history and politics to efforts for peace and prosperity, as seen in the example of Europe.

After the Asian Financial Crisis of 1997-98, nations in the region felt the need for financial cooperation and in order to provide liquidity for crisis-hit countries, the ASEAN+3 nations concluded the ASEAN Currency Swap Agreement (ASA) and Bilateral Currency Swap Agreements (BSAs) through the Chiang Mai Initiative (CMI) and promoted monitoring and surveillance of the regional economy. The debate to expand the CMI into an Asian Monetary Fund is also in progress.

In addition, these nations promoted the Asian Bond Market Initiative (ABMI) in order to issue bonds denominated in individual and regional currencies using excess liquidity. However, in comparison to present needs, the results of these endeavors have been unsatisfactory. If further developed, the CMI and ABMI will be of assistance in providing regional exchange rate stability and preventing financial crises.

More important in achieving regional exchange rate stability are the exchange rate system and coordination, and economic policy cooperation which supports them. In addition, exchange rate coordination will facilitate the expansion of the CMI through a strengthening of the li-

quidity support system.

There are significant differences in political form, society, culture and economic development, and there had been relatively little economic cooperation in comparison with other regions such as in the Americas and Europe due to friction caused by historical issues. However, after the 1997-1998 financial crisis, there came an awareness that it is difficult to prevent financial crisis contagion and maintain a continuous and desirable level of economic growth in the absence of regional cooperation.

This paper discusses the need for exchange rate and monetary cooperation between East Asian countries (including Japan) and between the U.S. and Japan, the form of exchange rate cooperation, the supplemental economic policies necessary for exchange rate cooperation, and the exchange rate system of Korea.

This paper also reviews various BBC (basket, band, crawl) exchange rate systems proposed to stabilize the effective exchange rates of East Asian nations, and proposes a more effective BBC system through changes in the currency basket and crawl method. In addition, it proposes an alternative BBC system limiting yen/dollar exchange rate fluctuations within a fixed range, to reduce carry trade, prevent sudden capital inflows and outflows, and stabilize the exchange rates between regional currencies.

In order to do this, Section II discusses the global and East Asian exchange rate systems and Section III discusses fixed and floating exchange rate systems. Section IV discusses the transformation of the Ko-

rea exchange rate system and the effects that exchange rate fluctuations have had on the economy. Section V reviews the BBC systems discussed for exchange rate cooperation in East Asia and proposes a new BBC system. Section VII discusses an alternative BBC system fixing the yen/dollar exchange rate within a band. Section VIII presents the adjustment of policy rates as a counterproposal to the adjustment of exchange rates. Section IX discusses the economic policies necessary for a BBC system, listing the lessons for East Asia gained from the experience of Singapore with the BBC system and discussing the possibility of Korea independently opting for a BBC system.

II. Global and East Asian Exchange Rate Systems

Exchange rate determination theory

In the short-run, the exchange rate is determined by the difference between domestic and foreign interest rates and expectation of future exchange rate fluctuations. Expectations of future exchange rate fluctuations are reflected in the forward exchange rates and are determined by expectations of future interest rate differences, expectations of money supply and prices, production activities, the current and capital account balance, employment, trends in stock prices, and unexpected news. Regulations concerning foreign exchange transactions and changes in domestic political and economic risk are also reflected in the exchange rate. If the inflow of foreign capital increases, the domestic currency shows a strong trend, and if the inflow decreases, the currency shows a weak trend.

In the long-run, the exchange rate is determined by the relative purchasing power of domestic currency to foreign currency. If there is an inflow of foreign capital due to a high real interest or real earnings rate and a current account surplus or the domestic economic growth rate rises relatively high, it will bring about a strong domestic currency.

The global exchange rate system

Many developing nations experienced severe foreign exchange and financial crises in the 1990s. Particularly severe examples were Mexico (1994), Thailand, Indonesia, Korea (1997), Russia (1998), Brazil (1999), Turkey, and Argentina (2001). It has been pointed out that one of the causes of the financial crises was the exchange rate systems. Due to the excessive foreign capital inflows into these nations, they had to abandon their exchange rate targets and adopt a system which increased the elasticity of their exchange rates. There have been various arguments regarding the appropriate exchange rate system.

The first school of thought asserts that the crises were due to policies which fixed exchange rates and therefore, the elasticity of the exchange rate must be increased.

The second school of thought asserts that these nations managed the exchange rates too loosely within the target bands prior to and after the crises, thereby causing the central banks to be unable to attain complete confidence and the exchange rate target to collapse. These systems are referred to as intermediate regimes, to which Indonesia, Thailand, Korea, Mexico, Russia, Brazil and Turkey belong. This school of thought stresses the advantages of fixed exchange rate systems in developing countries. As an example, there are those who use the currency board system (small scale nations such as Hong Kong, Argentina until 2001, Estonia, Latvia, and Bulgaria), Dollarizers (Equador, El Salvador, Guatemala, and formerly Panama), and the 12 nations of the

European Monetary Union (EMU).

The third school of thought is the corners hypothesis, which emerged in the second half of the 1990s. This hypothesis asserts that the exchange rate of developing nations must move toward either of the two extremes, a fixed or floating exchange rate, and the foreign exchange crises of the late 1990s teach us that intermediate systems cannot endure. However, the majority of the developing nations in East Asia have chosen to use intermediate exchange rate regimes.

The above three exchange rate systems each have their advantages and disadvantages. The appropriate exchange rate regime may differ according to particular situation and period of a nation. The selection may also differ according to the importance of the objective the nation is pursuing. Between the poles of fixed and floating exchange regimes are countless intermediate exchange rate systems which Frankel (2003) divides into 9 types as seen in the box below.

The U.S. may fall under the classification of a nation which maintains a free floating exchange rate. The majority of nations proclaiming to have a floating exchange rate regime actually employ a managed float, in which the government intervenes in the foreign exchange market to a limited extent, or an intermediate exchange rate regime in the case of much intervention. Even in Japan, there was much governmental market intervention in order to suppress trends of a strong yen until 2005. In intermediate exchange rate regimes, there are many different types, from the band system, which has much elasticity, to the adjustable peg.

The Bergsten-Williamson target band asserts that in using the equilibrium exchange rate reflecting market fundamentals as a standard and flexibly allowing fluctuations of the exchange rate within a set target band, it possesses the advantages of both floating and fixed exchange rates. The fundamental equilibrium exchange rate is an exchange rate which reflects the international competitiveness and trade conditions of export industries and leads to current account equilibrium in the long-run, attaching importance to the stability of the real effective exchange rate (REER). It also prescribes a relatively wide band in order to accommodate changes in foreign exchange supply and demand.

The Krugman-ERM (European Exchange Rate Mechanism) target band is similar to the EMS (European Monetary System) band. Before the creation of a common currency in 1999, nations which entered the EMS decided upon an intermediate exchange rate which linked their domestic currencies to the European currency basket, the European Monetary Unit (EMU), and managed their exchange rates within a considerably wide band.

The crawling peg is a system fixing the exchange rate to a major currency or currency basket and adjusts to a small extent as the situation demands. This is approximately two to three times a week. Changing the exchange rate in accordance with fluctuations of the domestic price index and wage index is the indexed crawling peg. Disclosing a monthly set rate of depreciation (e.g. 1 percent) and following that rate is the preannounced peg (also, *tablita* in South America).

Types of Exchange Rate Regimes

1. Floating exchange rate systems
   A. Free floating exchange rate systems
   B. Managed floating exchange rate systems
2. Intermediate exchange rate systems
   A. Band system
     (1) Bergsten-Williamson target zone
        (fundamental equilibrium exchange rate)
     (2) Krugman-ERM target zone (fixed nominal central parity)
   B. Crawling peg
     (1) Indexed crawling peg (linked to the index)
     (2) Preannounced crawling peg (e.g., Tablita)
   C. Currency basket peg
   D. Adjustable peg
3. Fixed exchange rate systems
   A. Currency board
   B. Dollarization or Eurorization
   C. Currency union

These two systems were employed in the past in South America where inflation was high. At times, a BBC system comprised of a currency basket, band, and crawl has also been used.

The currency basket system is a system in which the value of do-

mestic currency is either pegged or linked to the average of the exchange rates of currencies of several trading partners. For example, if the currencies of five trading partners depreciate by 5 percent to the USD on the average, the domestic currency is also depreciated by 5 percent against the USD in order to stabilize the currency to multiple currencies. It is to stabilize the nominal effective exchange rate. This is called the currency basket peg system.

In addition, due to the fact that export competitiveness drops if domestic inflation is higher than that of the five advanced nations, export competitiveness is maintained by stabilizing the real effective exchange rate through a depreciation equal to the difference in inflation.

In order to calculate the average exchange rate of the trading partners, currencies to include in the basket are selected and the weight of each currency in the basket is decided upon. Typically, the weight is based on the volume of trade with each trading partner, however, the importance of export competitive nations needs to be taken into consideration. In addition, the scale of capital transactions may also be considered when deciding upon weights. In this case, it is common for the USD to have a larger weight than its trade weight because the weight of the USD denomination as a method of payment or in capital transactions, foreign bonds, and debt is overwhelmingly large. In the Korean currency basket system in the 1980s, the USD was given a significant weight. Both current and capital transactions must both be considered if the exchange rate is not to misrepresent trade, because current transactions are transactions of current goods and capital

transactions are transactions between current goods and futures. However, the problem is in deciding how much consideration is given to capital transactions when calculating weight. In the foreign transactions of one nation, the current account transactions are relatively stable, but the capital inflows and outflows are largely unstable. Furthermore, the calculation of the weight of capital transactions is even more difficult because the weight of speculative capital in capital transactions is significant and volatile.

An adjustable peg is a system in which a fixed exchange rate system is maintained and the exchange rate is altered occasionally, approximately once a month. It is a system in which the exchange rate is intermittently adjusted in order to maintain export competitiveness in the event that domestic prices progress faster than overseas. In comparison to a crawling peg, adjustments are less frequent and larger in breadth.

There are many differences between the officially announced (de jure) and de facto exchange rate systems. According to the exchange rate system categories reported in the IMF International Financial Statistics, the official or de jure exchange rate regimes are as follows (Frankel 2004).

48 nations have abandoned independent currency through systemic fixed exchange rates. Of these, 12 are nations of the EMU, 36 are either developing or transition nations having chosen Dollarization (8 nations), currency board (8 nations) or currency union (20 nations). 98 member nations of the IMF have chosen intermediate exchange rate

systems.

Of these, although many nations assert that they have traditional fixed exchange rate, basket peg, or managed float systems, in reality, they are closer to intermediate exchange rate systems with adjustable peg, band, crawl, targeting, or a high degree of governmental intervention.

40 nations are classified as independent floating exchange rate systems. Excluding advanced nations, 36 nations have chosen fixed exchange rate systems, 98 nations have chosen intermediate exchange rate systems, and 31 nations have chosen floating exchange rate systems.

East Asian exchange rate systems

If we classify the exchange rate transitions of major developing nations in East Asia according to IMF classifications, it would be as seen in Table 1 (Jang and Choi 2002).

China was fixed to the dollar, however, it changed over to a fixed exchange rate system referring to a currency basket and has slightly increased the exchange rate fluctuation band. Malaysia has fixed its exchange rate to the dollar with a narrow band, and Hong Kong has chosen a currency board system, fixing its exchange rate to the dollar. Singapore selected a currency basket system and fluctuates its exchange rate within the policy band. Having experienced the 1997 financial crisis, developing nations in East Asia announced a transition

from the former managed floating exchange rate system to a nominal free floating exchange rate system and expanded the exchange rate fluctuation bands, however, in reality, they are still operating under a managed floating exchange rate system with government intervention. This is because there is apprehension in moving to a floating exchange rate as there is heavy reliance on exports in economic growth.

Table 1. Exchange Rate System Transitions of Major East Asian Nations

Nation	Exchange rate system transitions
Indonesia	Managed float (1978.11~97.6) → Free float (1997.7~)
Malaysia	Limited float (1986.1~90.2) → Fixed (1990.3~92) → Managed float (1992.12~98.9) → Fixed (1998.9~)
Philippines	Free float (1988.1~)
Thailand	Fixed (1970.1~97.6) → Free float (1997.7~)
Singapore	Managed float (1973.6~1981) → Currency Basket (1981~)
Hong Kong	Pound standard (1935.12~72.7) → Currency board (1972.7~74.11)→ Free float (1974.11~83.10) → Currency board (1983.10~)
Taiwan	Market-based (1982.9~89.4) → Float (1989.4~)
Korea	Fixed (1945.10~64.5) → Adjustable peg (1964.5~80.2) → Currency Basket (1980.2~90.3) → Market average (1990.3~97.12) → Managed float (1997.12~)
China	Fixed (1978.1~2005.7) → Currency Basket(2005.7~)

Sources: 1) Based on IMF category standards.
        2) Jang and Choi (2002), p. 37.

Kawai (2002) estimated the extent of fluctuations of the exchange rates of East Asian countries in accordance with fluctuations in the U.S. dollar, yen, and euro exchange rate in order to see which currencies

EMEAs are using as their basket currencies through a regression analysis using daily data of the exchange rates of East Asian countries, U.S. dollar, euro, and yen against the Swiss currency from June 1990 to June 2002.

According to the results of the analysis, it was found that Korea used the dollar and yen as its basket currencies from 1993 to 2002, Thailand used the dollar and yen from 1994 to 2002, and Singapore used the dollar, yen, and euro during the same period. The dollar exchange rate had an overwhelming influence on exchange rate fluctuations in Korea, Thailand, and Singapore. The yen's effect on won exchange rate fluctuations ranged from 4 to 28 percent, 7 to 31 percent on baht exchange rate fluctuations, and 7 to 34 percent on Singapore dollar exchange rate fluctuations. Following the financial crisis, the influence of the yen exchange rate on these three nations increased. Exchange rate fluctuations in Taiwan, Malaysia, Indonesia, the Philippines have continuously reflected dollar exchange rate fluctuations and for a period of time, yen exchange rate fluctuations as well.

III. Fixed and Flexible Exchange Rate Systems

1. Assessment of fixed and flexible exchange rate systems

The advantages of fixed exchange rate regimes are the provision of a nominal anchor in monetary policy, promotion of trade and investment, prevention of a competitive depreciation, and the avoidance of speculative bubbles. The advantages of floating exchange rate regimes are independence of monetary policy, automatic adjustment with regard to trade shocks, maintenance of seigniorage and lender of last resort capabilities, and avoidance of speculative attacks (Frankel 2004). The advantages of fixed exchange rate regimes are the disadvantages of floating regimes and vice versa.

The first advantage of fixed exchange rate is that the fixed exchange rate acts as a nominal anchor for monetary policy. This means adjusting monetary policy into conformity with the exchange rate target in order to prevent inflation. The fixed exchange rate provides monetary policy discipline and the government must maintain price stability. Although inflation may easily arise if monetary policy is used with discretion, if the exchange rate is fixed to the currency of a nation with strong market discipline, the inflation rate of domestic traded goods will resemble the inflation rate of that country. If workers or enterprises which decide prices and wages expect low inflation, requests for the raise of prices and wages must match those expectations.

More consideration must be paid to price stability rather than eco-

nomic growth or the increase of employment as it is difficult to maintain a fixed exchange rate if the rate of increase of prices is high.

In order to fix the exchange rate to a set level and within a set band, the policy authority purchases foreign exchange in the event of an excess supply of foreign exchange, and sells foreign exchange in the event of an excess demand. There are many cases in which developing nations abandon a fixed exchange rate system or experience foreign exchange crises due to the exhaustion of foreign reserves caused by prolonged trade deficits. If international speculative funds expect a depreciation and unilaterally launch speculative attacks even before foreign reserves are exhausted, developing nations will experience a large scale depreciation or financial crisis.

Second, a fixed exchange rate promotes trade and investment by eliminating the uncertainty and risk of exchange rate fluctuations and shrinking transaction costs by stabilizing the exchange rate. Trade and international capital transactions become more vigorous as the profitability of trade can be predicted, and the increase of investment and economic growth will accelerate. Internationally competitive industries have high profitability and experience rapid growth, and may enjoy economies of scale. Many developing nations do not have a futures market, and even if they did, there would be few hedging enterprises because of hedging costs and there is a high exchange risk if there are large exchange rate fluctuations.

Third, fixed exchange rate may prevent competitive depreciations and appreciations. It prevents the contagion of depreciation from one

nation to contiguous nations as in 1997. Therefore, many contiguous nations have concluded agreements with contiguous nations in order to fix the exchange rate.

Fourth, it may prevent speculative bubbles. As many exchange rate fluctuations arise unrelated to economic fundamentals, a fixed exchange rate may prevent uncertainty and the formation and collapse of bubbles by eliminating exchange rate fluctuations.

The first advantage of a floating exchange rate system is that it is possible to have monetary policy autonomy. If the movement of capital is free, monetary policy autonomy must be sacrificed in a fixed exchange rate system. If the exchange rate is fixed, the interest rate must be fixed to the international interest rate, and therefore policy to increase the money supply cannot affect the interest rate and brings about foreign outflow to the amount of rise of the money supply, and the interest rate cannot influence production and employment. Monetary policy cannot be used to recover internal equilibrium, but only the external equilibrium. If there is a current account deficit due to a decrease in exports, the authorities must supply foreign exchange and buy domestic currency in order to eliminate the excess demand of foreign exchange.

Because developing countries generally have a large fiscal deficit, if the economy and employment worsen, they do not rely solely on fiscal policy but desire monetary policy which can be taken fast and easily. Therefore, it is difficult to maintain a fixed exchange rate which causes the loss of monetary policy instruments. When there is a fall in total

demand, either wages and prices drop or economic stagnation will persist until the effects of other forms of automatic adjustment are seen, and this requires a long period of time.

If the fixed exchange rate system is to be sustained, the fundamentals of the economy must be strengthened. When there are internal or external shocks, prices and productive factor prices such as wages and rents must be flexible. For example, if export demand falls, prices, wages and production costs must also fall in order to avoid a worsening of the current account, production and employment. There is a need for strong fundamentals such as strong rule of law, sufficient foreign exchange reserves, financial discipline, and a strong and well-supervised financial system. If exchange rate fluctuations are possible, the economy may be recovered through an increase in demand through an increase in the money supply and depreciation.

Second, when there are external shocks such as a sudden capital outflow or slowdown in the export market, the exchange rate blocks effects on the domestic economy by acting as a buffer through a change in the exchange rate. A reduction in foreign demand or a worsening of terms of trade leads to a devaluation of the real exchange rate even when prices and wages are rigid, increasing demand and recovering production and employment.

Third, it possesses the advantages of an independent central bank, namely, seigniorage and lender of last resort. When domestic financial institutions face a crisis, the central bank may issue currency of an amount necessary in order to save them.

Fourth, in a fixed exchange rate system, there is a tendency to be susceptible to speculative attacks through the negligent hedging by borrowers of the risk of exchange rate fluctuations in the foreign exchange market. However, in a floating exchange rate system, there must be hedging of fluctuations risk and therefore, provisions for this are proactively pursued. In addition, in a fixed exchange rate system, when there is a cause of exchange rate fluctuation present, the exchange rate does not fluctuate immediately and the fluctuation pressures accumulate. At some point, the economy becomes susceptible to speculative attacks of international capital and in the end, the exchange rate suddenly fluctuates to a large extent, significantly impacting the economy and rendering it susceptible to financial crises. In a floating exchange rate system, the exchange rate is adjusted as occasion calls and thereby, speculative attacks may be avoided. However, in a floating exchange rate system, exchange rate fluctuations are severe and the exchange rate strays from the equilibrium exchange rate for long periods of time causing export industries to collapse or overheat and rendering the economy susceptible to financial crises. If exchange rate fluctuations are extreme, an expansion of investment is difficult as the profitability of traded goods industries is uncertain, the exchange of capital and trade is suppressed and economic growth is slowed. A competitive depreciation between nations may also bring about financial crisis.

In addition, the government may believe in the ease of depreciation and use expansionary monetary and fiscal policy in order to increase

employment, increasing the possibility of the induction of inflation. It may also bring about depreciation and a vicious cycle of inflation in nations with high inflation rates.

If there is a large amount of trade with neighboring nations, there is a push for fixing the exchange rate through exchange rate coordination or implementing a single currency because a floating exchange rate raises transaction costs and interferes with trade and investment. The EU is an example of this.

In developing nations whose scale of economy is large, there is a preference for a managed float. This is to protect export and manufacturing industries and gain significant freedom in monetary policy by allowing exchange rate fluctuations within a limited range.

If export industries are endangered through appreciations of the domestic currency, appreciatory pressures are reduced through the purchase of foreign exchange. The interest cost in accordance with the issuance of foreign exchange stabilization bonds and government bonds is very high and the opportunity cost of accumulated foreign reserves is also very high. If the domestic currency excessively devalues, depreciatory pressures are suppressed through the sale of foreign exchange reserves. A financial crisis may also arise through the exhaustion of foreign exchange reserves. The permissible range of exchange rate fluctuation differs from nation to nation.

When the economy and employment conditions are poor, quick support of the economy by lowering the interest rate and expanding government spending and tax cuts is politically requested. Large-scale

nations want to have various economic policy instruments because there is a large heterogeneity between industry, region, class and there are policy preferred sectors. These include loan amount, interest rate, exchange rate, and fiscal instruments. This is the reason for the widespread use of managed floating exchange rate systems. Many nations use these in concert with capital controls.

Emerging nations in East Asia (EMEAs) have preferred managed floating exchange rates as much importance is attached to the stability of the real effective exchange rates and trade and investment areas are diversified.

The reason for the high levels of exports, investment and economic growth of the Korean economy from the 1960s to 1980s is due to the maintenance of export competitiveness through real effective exchange rate stability. When the exchange rate had been overvalued, the government took efforts to prevent the worsening of the profitability of export enterprises through the provision of export subsidies.

The economic growth rate of EMEAs fell by 2.5 percentage points in comparison with pre-crisis levels after the foreign exchange crisis, and one of the major causes for the large drop in the rate of increase of investments was the increase of investment risk due to large fluctuations of the exchange rate.

In recent years, intervention in the exchange rate by the Japanese and Korean governments has decreased. In the case of Korea, the real effective exchange rate (REER) from January 2005 to July 2007 was very strong as in 1995-96, before the foreign exchange crisis (Figure 2). Dur-

ing the period from 2006 to the first half of 2007, the Japanese real effective exchange rate declined to the weakest level similar to one prior to the September 1985 Plaza Accord.

After 1997-98, many economic experts asserted that either a fixed or floating exchange rate system is most suitable as intermediate exchange rate systems may easily induce economic crises and require high costs of maintenance (Eichengreen 2001). However, EMEAs have returned to a managed float with a considerably high level of governmental intervention after the financial crisis. Exceptions to the rule are Hong Kong, which pegged to the dollar, and China and Malaysia, which allowed exchange rate fluctuations within a narrow band. There is no single exchange rate mechanism which best applies to all nations.[1] The selection of exchange rate mechanism may differ in accordance with characteristics of the economy, priorities of policy targets, and costs and benefits.

Much recent research indicates that intermediate exchange rate systems are stronger than previously believed.

Bordo (2003) points out that the Corners Hypothesis is not applicable to the reality of international exchange rate systems as there is still a large margin of application even in developing nations whose financial systems are not sufficiently mature for floating exchange rate systems. Actually, the majority of nations have chosen intermediate systems and show large discrepancies between the official and actual exchange rate systems.

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1) Frankel (1999).

2. Optimum currency area (OCA)

Nations which closely integrate in trade and other economic relationships form an optimum currency area (OCA). An OCA is an area in which it is reasonable to have a fixed exchange rate and monetary policy autonomy with an independent currency. Smaller nations are more open than larger nations and tend to be more integrated with neighboring countries. An OCA can be defined as an area which is not too small and open to gain benefits from having its currency pegged to the currency of a neighboring country and not too large to have to be divided into separate regions with differing currencies.

The standards for optimum currency areas are the following (Frankel 2004). The standards differ in accordance with the degree of integration. The degree of integration may also be viewed as openness. The higher the degree of integration, the greater the benefits from using a fixed exchange rate and pegging to neighboring currencies.

• Openness: If the economy is open and traded goods occupy a large weight of the economy, it is beneficial to peg to neighboring currencies, as it is extremely important to curtail transaction costs and anxiety and risk associated with exchange rate fluctuations.

• Labor mobility: If there is ease of labor mobility to contiguous nations during periods of economic stagnation, a fixed exchange rate is beneficial as there is no need for an increase of money supply or depreciation.

• Fiscal cushions: If a federal fiscal system which moves funds to

areas experiencing economic shocks exists, it will help in decreasing economic fluctuations in the absence of an independent currency.

• Symmetry: If the shocks experienced by two economies are correlated, there is no need for monetary independence. The two nations may cooperate and plan to increase their money supplies in concert.

• Political intent to accommodate the policies of neighboring nations: If the priorities of two nations' policies are similar, there is no need to have differing reactions to a common shock.

Conventional OCA standards as outlined above are related to trade and economic stability. However, after the financial crisis of the 1990s, new supplementary standards were added with relation to the international finance market and reliability.

• A strong need for monetary stability: In the case that a nation has a history of hyperinflation, lack of trustworthy public agencies, exposure to fickle international investors, or volatile political environment, it is beneficial to peg to the currency of a neighboring country.

• Desire for closer integration with specific trading partners: If a nation wishes to have a more intimate economic relationship with a trading partner, it is beneficial to fix its exchange rate to the currency of that nation.

• Economy which widely uses foreign currency: In a nation which uses the currency of an international power on a large scale, it is beneficial to peg its currency to the currency of that power for the sake of economic stability.

• Sufficient foreign exchange reserves: It is easy for a nation which

has sufficient foreign reserves or has access to sufficient foreign exchange in times of need to fix its currency.

• Maintenance of the rule of law: In nations which well maintain rule of law, maintaining a fixed exchange rate is easier than in nations which do not.

• A strong and well supervised regulatory financial regime: In nations in which financial institutions are strong and the financial regime regulates well, maintenance of a fixed exchange rate is easy.

In accordance with the increased openness and trade and investment connections of nations in East Asia, there is a higher possibility for exchange rate cooperation, a fixed exchange rate, and a currency union. In addition, if exchange rate and monetary cooperation occur as in the case of Europe, economic conditions draw closer to OCA standards.

IV. Korean Exchange Rate Policy and the Effect of Fluctuations

1. Transitions of Korean exchange rate policy

Korea abandoned the dollar peg in 1964, the won's value against the dollar depreciated sharply and an adjustable peg against the US dollar was adopted. There were occasional depreciations to facilitate exchange rate actualization in order to maintain international competitiveness in a high inflation economy, and until 1982, many incentives to export related activities were provided in order to promote exports. Due to these steps, exports continuously increased greatly. During the first half of the 1980s, foreign debt was large and the export market was stagnant, and therefore, there were efforts to adjust the exchange rate in order to revive exports.

In order to come into compliance with OECD international criteria, low interest export financing of a subsidy nature was discontinued in 1982. Prior to that time, actual exchange rate (AER) adjusted for purchasing power (exchange rate calculated by combining the official exchange rate and the per dollar export subsidy) was stabilized through export support executed in order to recover export competitiveness which had been plagued by chronic inflation (Table 2).[2] In addition, strong export promotion policies, such as export target allotment and

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2) Wang (1980), Trade Structure and Policy; Kim (1994), p. 325.

commendations by industry and new enterprise entry permits for superior export enterprises, were taken.

Table 2 shows the trends of the export AER combined with export subsidies and the purchasing power parity (PPP)-adjusted AER. The import AER is the combination of the exchange rate and customs duties on imports per dollar. In late 1970s, export subsidies reached 20 percent of the official exchange rate. In January 1980, the exchange rate depreciated by 19.5 percent against the dollar with the selection of the currency basket exchange rate system in order to reflect the per dollar export support in the official exchange rate.

Korea selected a currency basket system during the period from 1980 to 1989 in order to stabilize the won against the average value of the currencies of major trading partners in accordance with the diversification of major trading partners. It was a system in which the won/dollar exchange rate was pegged to the average of the exchange rates of 6 or 7 major trading partners. However, in reality, the exchange rate was adjusted with consideration of factors of the difference in domestic and foreign inflation rates, the current account balance, foreign debt, and the economic and employment situation in addition to the basket currency peg. The government did not disclose the weights given to each currency included in the basket. As the USD is the currency for most trade payments and the denomination of the majority of capital transactions, the weight of the USD in the currency basket was larger than the weight of trade with the U.S.

In the first half of the 1980s, there were annual large-scale deprecia-

tions through consideration of the current account deficit, the fourth largest foreign debt in the world, global economy stagnation, and the low manufacturing industry operating ratio in addition to the currency basket peg. The exchange rate was fixed at 484 won to the dollar from 1974 to 1979, two oil shock periods, to stabilize prices. In 1980, the exchange rate of the won depreciated 36.4 percent (660 won to the dollar) due to political disorder and economic stagnation, and depreciated another 35 percent (890 won to the dollar) from 1980 to 1985.

Through the Plaza Accord signed in 1985, large appreciations of the Japanese yen and German Deutsche mark against the dollar brought about a "three lows" condition. The three lows are low dollar (value), low interest rate, and low price of oil. The low dollar brought about a weak won to major currencies because the weight of the dollar was large in the basket currency. The three lows condition significantly raised the export competitiveness of Korean goods and in the late 1980s, the scale of industrial production doubled. During the period from 1986 to 1988, real GDP increased by 11 percent yearly. The current account approached equilibrium in 1985, and from 1986 to 1989, Korea saw its first current account surplus of an amount of 33.6 billion USD.

In 1988, the U.S. Department of the Treasury identified Korea and Taiwan as countries which manipulate their exchange rates and threatened that if exchange rate policy was not changed, retaliation such as tariffs on trade would be imposed.

Through appreciatory pressures, the exchange rate of the won against the dollar appreciated 23 percent from 1985 to 1989 (the pres-

sure for the appreciation of the won by the U.S. and the transition of the exchange rate in Korea are described in the box below).

In the latter half of the 1980s, prices and wages rose significantly due to a large influx of foreign capital and economic overheating, the democratization movement and severe labor disputes. During this period, manufacturing industry wages rose an average 30 percent or higher annually. The real effective exchange rate was overvalued due to the high rate of wage increase and exchange rate appreciation, and in 1990, the current account balance again went into a deficit, and from 1991 to 1997, the extent of the deficit increased greatly.

In 1990, Korea switched to a market-average exchange rate system due to pressure from the U.S. demanding transparency of exchange rate fluctuations. The basic exchange rate was determined by the exchange rate applied to previous day foreign exchange transactions of commercial banks, and the exchange rate was determined by the supply and demand of foreign exchange, within fixed bands.

Table 2. Export-Import Actual Exchange Rate and PPP-Adjusted Actual Exchange Rate

(Unit: KRW/USD)

	Actual exchange rate (AER)			Purchasing Power Parity (foreign price index[3])/domestic price index) (D)	PPP-adjusted AER		
	Official exchange rate (A)	AER			Official exchange rate (E)= A×D/100	PPP-adjusted AER	
		Export (B)[1]	Import (C)[2]			Export (F)=B ×D/100	Import (G)=C ×D/100
1962	130.0	151.3	146.2	245.2	318.8	371.0	358.5
1965	266.7	298.7	294.4	141.2	376.6	421.8	415.7
1968	276.9	357.5	302.8	119.2	330.1	426.1	360.9
1970	311.1	404.0	336.8	109.0	339.1	440.4	367.1
1972	394.0	504.6	417.4	100.0	394.0	504.6	417.4
1975	484.0	556.1	508.9	79.8	386.2	443.8	406.1
1978	484.0	589.7	527.2	78.2	379.0	461.7	412.8
1980	607.4	748.1	642.2	57.6	348.5	431.5	370.4
1983	775.8	924.2	832.2	47.4	368.6	439.0	395.4
1985	870.0	1036.4	920.9	46.4	405.0	482.3	428.6
1990	708.6	844.2	748.5	56.7	402.9	479.8	425.5

Notes: 1) Export actual exchange rate: official exchange rate + export support per dollar exports

2) Import actual exchange rate: official exchange rate + customs duties per dollar imports

3) Weighted average of U.S. and Japanese wholesale price index (applying weights based on the volume of trade of Korea with the U.S. and Japan)

Sources: *Economic Statistics Yearbook,* Bank of Korea;

Economics Statistics Yearbook, Statistical Bureau of Japan;

Survey of Current Business, Department of Commerce, U.S.A.;

Wang (1980), p. 113.

In the 1990s, as capital-account liberalization was facilitated and there was a large amount of short-term capital flowing into East Asia

due to the low interest rates of advanced nations and the high interest rates in East Asia, EMEAs chose a de facto dollar peg. Due to the large current account deficit of the U.S. at the time, the IMF held the position opposing the devaluation by East Asian nations. The current account deficit continued as asset inflation and the rate of wage increase in East Asia were high and the exchange rate was overvalued. In Korea, the asset bubble which built up from the late 1980s began to collapse in the mid 1990s. The economic stimulus policy of the Kim Young-sam administration in 1993 postponed the bursting of the bubble. Although the current account deficit was large and continuing, it was difficult to depreciate because of the large amount of foreign debt of businesses.

While the exchange rate of EMEAs was overvalued, the RMB in 1994 and the yen in 1995 underwent significant depreciations, and, combined with the strong dollar from 1995 to 1997, may be one of the major factors of the East Asian foreign exchange crisis.

Korea-U.S. Negotiations and Appreciatory Pressures of the Won[1]

In 1986, as Korea showed a current account surplus, the U.S. requested exchange rate negotiations and there were several rounds of meetings between the two nations. In January 1987, Senators Baucus, Moynihan and Sanford presented a bill on a fair exchange rate and trade to the U.S. Congress. This bill selected nations who manipulated their exchange rates and requested that the U.S. Department of the Treasury engage in negotiations with those nations. If they were unable to achieve a fair exchange rate within six months through negotiations, the U.S. Trade Representative (USTR) would begin trade negotiations and obtain a concession. In the case that the USTR was unable to obtain a concession, the government was to report this to Congress and Congress was to ensure the appropriate retaliatory measures were to be taken. The nations targeted by this bill were Korea and Taiwan. Senator Moynihan's exchange rate adjustment proposal and Senator Bentsen's collective trade proposal both included exchange rate adjustment negotiations.

The scale of the appreciation of the won requested by the U.S. Department of the Treasury and the scale of the real appreciation during the period from 1987 to 1989 are as seen in Tables 1 and 2.

In the Secretary of the Treasury meeting in 1987, Secretary of State James Baker pointed out that the exchange rate of Taiwan ap-

preciated at 15.3 percent and of Japan at 10.3 percent, but that of Korea stopped at 6.45 percent and requested that the won appreciate to a larger extent.

Korea's response was as follows. Taiwan had almost no foreign debt and maintained a current account surplus throughout the 1980s.   However, Korea saw its first current account surplus in 1986 and yet had an immense amount of foreign debt. Furthermore, wages and prices in Korea were rapidly rising.

Table 1. Requested Appreciation of the Won by the U.S.

Negotiation Period	Requested appreciation rate (month end, W/$, %)	Actual appreciation rate[1] (month end, W/$, %)
1. April 1987 ADB meeting	March - June 846.9→780 (7.9%)	June 808.9 (4.5%)
2. April 1988 Baker and Dallara	March - June 746.2→700 (6.2%)	June 728.3 (2.4%)
3. December 1988 Assistant ministers meeting	Continuous appreciation within reason	Continuous appreciation
4. February 1989 Ministers meeting	Continuous appreciation within reason	Continuous appreciation
5. March 1989 Assistant ministers meeting	March - May 671.9→650 (3.3%)	May 671.9 → 666.7 (0.8%)

Negotiation Period	Requested appreciation rate (month end, W/$, %)	Actual appreciation rate[1] (month end, W/$, %)
6. April 1989 Assistant ministers meeting	March - June 671.9→657 (2.2%)	June 671.9 → 667.2 (0.7%)
7. August 1989 Letter from Secretary Brady	(1) Continuous appreciation (2) Proposal for regular meetings on finance, foreign exchange and the capital market	Continuous appreciation

Note: 1) Month-end standard.
Source: U.S. Department of the Treasury.

According to Article 304 of the Omnibus Trade Act, the U.S. Secretary of the Treasury must investigate whether a nation is manipulating its currency in order to avoid effective balance of payments adjustment and to inequitably strengthen competitiveness in international trade. In addition, starting in October 1988, the Secretary of the Treasury must submit a biannual report to Congress concerning the international economy and exchange rate policy.

In October 1988, Korea and Taiwan were identified as nations which manipulate their exchange rate and afterward, Korea was reported to Congress twice in 1989 as such. The U.S. Department of the Treasury began bilateral negotiations with Korea and Taiwan immediately. The U.S. pointed out that Korea determined its exchange rate relying excessively on policy variables in order to im-

prove its balance of payments, and strengthened exchange rate control through strong governmental regulation of capital and financial transactions and limited exchange rate appreciations.

Table 2. Appreciation Trend of the Won

(Unit: won/$, %)

	1/4	2/4	3/4	4/4
1986	885.2 (0.56)	886.6 (0.4)	887.0 (1.48)	861.4 (3.24)
1987	846.9 (1.68)	808.9 (6.09)	805.8 (6.45)	792.3 (8.02)
1988	746.2 (5.82)	728.3 (8.08)	719.0 (9.25)	684.1 (13.66)
1989	671.9 (1.78)	667.2 (2.47)	670.0 (2.06)	679.6 (0.66)
1990	702.1 (-3.31)	716.0 (-5.36)	712.9 (-4.90)	716.4 (-5.41)
1991	724.7 (-1.16)	723.1 (-0.95)	741.5 (-3.50)	760.8 (-6.2)

Notes: 1) Figures are exchange rates at the end of each quarter.
2) Figures inside parentheses represent the percentage change.
3) Negative figures represent a devaluation of the won.

Korea appreciated the won against the USD 8.0 percent year-end in 1987 (6.7 percent mid-year) and 13.7 percent year-end in 1988 (11.1 percent mid-year). Due to the strong dollar against other currencies in the 1988, the won was strong against other currencies and began to lose the export competitiveness it experienced in the first half of the 1980s. The strong won against the yen continued into 1989.

In the latter half of 1988, the Korean government joined Clause 8 of the IMF and in accordance, announced liberalization of current account transactions and showed intent to alleviate foreign exchange regulation. In addition, at the end of 1988, announced a

plan to partially liberalize the interest rate. However, this did not come into effect until November 1991.

In 1989, the won depreciated by 0.66 percent year-end (8.1 percent mid-year). The current account surplus dropped from 14.2 billion USD (8.4 percent of GNP) in 1988 to 5.1 billion USD (2.5 percent of GNP) in 1989. Korea's trade surplus with the U.S. also fell by 30 percent to 6.3 billion USD.

During the period from September 1985 to June 1989, the nominal appreciation rate, at 32.4 percent, was significantly lower than that of Japan and Taiwan. However, the real appreciation rate, at 18.6 percent, was similar to that of Taiwan (18.4 percent) and Japan (21.2 percent) as seen in Table 3.

Table 3. Appreciation rate of major currencies against the dollar after the Plaza Accord (22 Sept 1985 - 2nd quarter, 1989)

(Unit: %)

	Korea	Japan	Taiwan
Nominal	32.4	72.8	53.3
Real	18.6	21.2	18.4

Source: KITA (1989).

However, in October 1989, the U.S. Department of the Treasury identified Korea alone as a nation which manipulated its exchange rate for the third time. Korea was concerned about the possibility that the USTR would consider exchange rate policy as export promotion and take retaliatory measures outlined in Article 301. Taking into consideration the rapid rise of wages in Korea after 1987, appreciatory pressures from the U.S. caused an excessively high

appreciation of the won.

The overvaluation of the real effective exchange rate of the won calculated using unit labor cost index in 1989 may explain this (see Figure 2. The U.S. requested an appreciation of the won within reason, however, there was no clear concept of what that entailed. In 1991, Korea's current account deficit reached 9.6 billion USD.

In the Korea-U.S. financial policy meeting held regularly from 1990 to 1991, there was a discussion on Korea's finance, foreign-exchange, and capital policies and various measures to alleviate regulation were taken.

In March 1990, the market average exchange rate system was introduced and in January 1991, there was a liberalization of interest rates for certain deposits and loans.

In October 1991, Korea executed a full-scale reform of its foreign exchange management law and announced its plan to convert from a positive system to a negative system. Although foreign exchange transactions were opened without exception, capital transactions were continued under provisional regulation as permitted. This was the first full-scale reform since 1961. From January 1992, the capital market began to partially open to foreigners.

Note: 1) Wang (1992), pp. 78-82.

Transition of the Korean Exchange Rate System

Pre-1964: Fixed to the USD

1964-1979: Single floating exchange rate system

(de facto adjustable peg to the USD)

1974-1979: Fixed at 484 won to the US dollar

1980-1989: Basket currency exchange rate system

1990-1997: Market average exchange rate system

1998-present: Floating exchange rate system (de facto managed floating)

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2. The effects of exchange rate fluctuations on the economy

A depreciation of domestic currency against the currencies of trading partners raises the prices of traded goods denominated in won and a gap in the relative price of traded goods and non-tradables (domestic demand-oriented goods), increasing the profit of traded goods industries and thereby causing a movement of resources from domestic industries to traded goods industries. Traded goods are goods which may be imported or exported. Recently, the trade weight of the services has increased, with tourism, hotels, education, medicine, consulting, finance and insurance having the character of traded goods. If the won depreciates 10 percent against the dollar, 10 percent assistance is given to export volume, 10 percent is levied from import volume, and the burden of foreign debt in domestic currency is raised by 10 percent.

Therefore, it influences the promotion of exports and the suppression of imports and foreign borrowing. The exchange rate has a larger influence on the trade of countries who trade in internationally standardized goods. It also places a heavy burden on corporations with high levels of foreign borrowing. Despite the large current account deficits persisting in the mid-1990s, the primary reason the Korean government could not carry out appropriate depreciations was because the foreign debts of large corporations and financial institutions were considerable.

In the early stages of depreciation, exporters increase exports as won-denominated profits rise to the extent of the depreciation (e.g. 10 percent). As foreign importers also want a share of the profits, there is a tendency for exporters to reduce dollar-denominated export prices (e.g. 5 percent) and attempt to increase export volume. Conversely, if the value of the won appreciates, a portion of the scale of the rise shifts to a rise in dollar-denominated export prices.

Through the increase of export profits and export volume due to a depreciation of the currency, investment in export companies increases and foreign exchange reserves and the money supply increase as well. Imports and the profit of import enterprises decrease, and production and investment in import substitution industries increase.

On one hand, a depreciation of the won becomes a factor in reducing consumption and investment by raising prices and thereby reducing household real income and real currency balances. The import of goods and services and spending on domestic goods and services decline.

In an economy with idle resources such as labor and material re-

sources, that is, an economy with unemployment, a depreciation would result in an accumulation of investment and capital and an increase in foreign exchange reserves, technology and production through an increase in demand. However, in an economy with full employment, it raises only nominal economic variables such as prices, wages, and the interest rate. In reality, there exists a substantial unemployment in the majority of nations.

In the production process, the price of goods and services which use imported goods gradually rises with the passage of time, and the price of domestic goods and wages rise gradually as well. When expectations of inflation are high, a large degree of depreciation carries a risk of inflation and therefore, total demand management is necessary.

Effects of depreciation on the economy can be analyzed by an econometric analysis and an inter-industry analysis.

Econometric Analysis

Table 3. Effects of a 5 Percent Depreciation of the Won/Dollar Exchange Rate

(Unit %, billion USD)

	GDP (%)	Consumer price index (%)	Current account (billion won)
First year	0.35	0.40	2.65
Second year	0.30	0.50	2.25
Third year	0.30	0.55	2.90

Source: Bank of Korea (2005).

The effect of a depreciation of the won on major economic variables can be measured by simulations using an econometric model. The sizes of policy effects are different depending upon models, due to different specifications of equations and different data for the different periods. According to an econometric model using quarterly data from the first quarter of 1990 to the fourth quarter of 2004 by Bank of Korea, the effects of a 5 percent depreciation of the won/dollar exchange rate on GDP, consumer price indices, and the current account balance are as seen in Table 3. In the first year, GDP rises 0.35 percent, consumer price indices rise 0.4 percent and the current account balance increases by 2.65 billion USD.

According to the simulations based on the quarterly econometric model (using data from the 1990s and the first half of 2000) of Jo Dong-cheol and Kim Dong-seok (2005) of Korea Development Institute (KDI), in the event that the real effective exchange rate of the won depreciates by 5 percent, GDP increases by 0.27 percent, price indices increase by 0.49 percent, and the current account balance increases by 5.68 billion USD in the first year. Furthermore, household consumption rises by 0.69 percent and total investment rises by 0.83 percent (Table 4).

Table 4. Effects of a 5 Percent Depreciation of the Won REER

(Unit: %, billion USD)

	GDP (%)	Consumer price index (%)	Current account (billion won)	Household consumption (%)	Total investment (%)
First year	0.27	0.49	5.68	0.69	0.83

Source: Jo and Kim (2005).

However, the GDP increase is shown to disappear after two to three years in the above model. Simulation exercises in the other nations show that a depreciation raises investment, GDP, and price indices for several years.

As the effect of exchange rate fluctuations differs in accordance with changes in economic structure and international environment, those effects also differ in accordance with the assumed period. According to a simulation using Wang's econometric model applying yearly data from 1962 to 1977, the effect of a depreciation of the won against the dollar on major economic variables are as shown in Table 5. The effect of a depreciation of the won on the economy was larger in the early stages of economic growth. In the early stages of economic growth in Korea, the volume of trade reacted more sensitively to exchange rate changes and economic growth was more dependent on trade.

Table 5. Effects of a 5 Percent Depreciation of the Won/Dollar Exchange Rate

(Unit: %)

	Exports	Imports	GNP	Employment	PG	PW	PC
First year	0.81	-1.18	0.95	0.28	1.68	1.81	1.17
Second year	1.15	-1.51	0.76	0.35	2.07	2.46	1.76
Third year	1.50	-0.93	0.99	0.38	2.28	2.95	2.23

Notes: Export$ - Volume of goods export, constant price
      Import$ - Volume of goods import, constant price
      GNP - Real gross national product, constant price
      Employment - Number of workers in all industries
      PG - GNP deflator
      PW - Wholesale price index
      PC - Consumer price index
Source: Wang (1980).

In the case that the won depreciates 5 percent to the US dollar, exports rose 0.8 percent in the first year and 1.15 percent in the second. Imports decreased 1.18 percent in the first year and 1.51 percent in the second. GNP increased by 1 percent and employment rose 0.3 percent in the first year. The consumer price index rose 1.8 percent in the first year and 1.8 percent in the second. The estimated export and import equations of the model used in the simulation are as seen in Appendix 1.

Inter-industry Analysis

The depreciation of the won immediately brings about a rise in the won cost of imports and in the case of consumers, immediately decreases their real purchasing power. According to Jo Dong-cheol (2005), based on an inter-industry analysis in 2000, the consumption goods import volume was 23.8 trillion won (10 percent of total imports). A 5 percent rise in the exchange rate in 2000 brought about a rise in domestic and overseas costs of 1.2 trillion won (1.3 percent of total consumption) borne by consumers. The facility and equipment investment import burden also rises. The import volume of equipment investment goods was 22.4 trillion won (14 percent of total imports, 5.6 percent of GDP), and a 5 percent rise in the exchange rate in 2000 brought about a rise in costs of 1.7 trillion won (2.8 percent of total equipment investment) borne by enterprises.

Although a rise in the exchange rate (won/USD) brings about a rise in export competition, through a rise in the import cost of intermediary

goods, the margin brings about an enterprise operational surplus. A 5 percent rise in the exchange rate in 2000 resulted in a enterprise export volume increase of 11.8 trillion won and a rise in the cost of intermediary goods of 9.1 trillion won, resulting in an increase in operational surplus of 2.7 trillion won (0.2 percent of total production).

Gains and losses due to exchange rate fluctuations differ depending on the sector. The higher the ratio of exports to total production and the lower the ratio of imported intermediary goods cost to total costs, the greater influence a depreciation has on operational profits. Although over 80 percent of the production volume of semiconductors and shipbuilding are exported, the weight of imported intermediary goods in semiconductors is higher than in shipbuilding and therefore operational profits in semiconductors from a rise in the exchange rate are relatively small.

Although both public utilities (electricity, natural gas, and water) and coal industries are domestic industries, the weight of imported goods in the coal industries is relatively higher and therefore in the case of an rise in the exchange rate, profits are less. If the exchange rate rises 5 percent, the industries which gain high operational profit rates relative to total production in order from largest to smallest are: shipbuilding (3.2 percent), textiles and clothing (1.5 percent), semiconductors (1.1 percent), automobiles (1 percent), household appliances (1 percent), precision equipment (0.9 percent), and transportation and storage (0.9 percent). The industries which gain the high operational loss rates relative to total production in order from largest to smallest

are: coal products (3.4 percent), oil products (2 percent), food and beverage (1.5 percent) and electricity, gas, and water (1.1 percent).

V. The Need for Exchange Rate and Monetary Cooperation in East Asia

There is a need for exchange rate and monetary cooperation within the region and between USA and Japan in order to promote economic growth, prevent excessive inflows of international short-term capital and liquidity crises, reduce the disequilibrium in international finance, and promote the effective use of foreign exchange reserves. The possibilities and needs for cooperation are as follows.

First, the economic benefits from cooperation have increased due to the high degree of trade reliance due to geographical contiguity. In 2004, the population in East Asia (ASEAN+3) was 2.01 billion persons and the East Asian economy occupied 19 percent of world GDP and 19.5 percent of world trade volume, making it one of three economic powers alongside the EU and NAFTA. Japan was ranked second in GDP and China was second, when GDP is calculated according to purchasing power parity, and third in trade. In 2008, it is predicted that China will move up to second in trade. Korea is ranked eleventh in trade. In 2004, the GDP of ASEAN was 12 percent higher than that of Korea at 790 billion USD, and East Asia (excluding Japan) is experiencing the most rapid economic growth in the world. The trade volume of ASEAN is higher than that of Japan but less than China.

East Asia's reliance on trade (trade weight to GDP) in 2004 was 46 percent, lower than the world average of 54 percent, but with the exclusion of Japan which has a low ratio (20 percent), ASEAN was 127

percent and China and Korea were each very high at 70 percent (Table 7).

Table 6. Major Macroeconomic Indices of East Asian Nations (2004)

	Area	Population	GDP	Per capita GDP	Goods export	Goods import
	thousand ㎢	million	billion USD	USD	billion USD	billion USD
Singapore	0.65	4.4	106.8	25,192	181	155
Thailand	513	62.6	161.6	2,550	95	94
Malaysia	330	24.7	117.8	4,667	127	99
Indonesia	1,920	214.5	252.7	1,185	72	51
Philippines	300	81.5	84.6	1,020	39	41
Brunei	5.8	0.4	5.4	14,904	-	-
Vietnam	327	81.1	45.3	549	26	31
Laos	237	5.6	2.1	371	-	-
Myanmar	680	53.5	9.3	186	-	-
Cambodia	180	13.6	4.4	325	2	3
Subtotal	4,493	541.9	790		542	474
China	9,600	1,293	1,653.7	1,272	594	561
Japan	378	127.6	4,587.3	35,939	537	407
Korea	99	48.1	680.5	14,075	258	219

Sources: Global Insight (2005); An and Jeong (2007).

The ratio of regional trade reliance[3] to total trade volume in East Asia was 30 percent in 1990 and rose to 38 percent in 2004. This is low-

3) Regional trade dependence = Regional trade volume/average volume of exports and imports

er than the trade reliance of the 25 nations of the EU at 69 percent and NAFTA at 45 percent but has been rapidly increasing in recent years (Table 8) (An and Jeong 2007).

The primary incentive for pursuing regional exchange rate cooperation in Europe was the increase of regional trade reliance (Wyplosz 2001).

Table 7. Total Trade Volume of East Asian Nations (2004)

(Unit: billion USD)

		Export	Import	Trade reliance (trade volume/ GDP, %)	Trade balance	Trade balance/ GDP (%)
World		11,053.6	11,031.2	54	-	-
East Asia		1,933.0	1,658.5	46	274.5	3.5
ASEAN		544.0	471.8	127	72.2	9.1
	ASEAN 6	515.0	439.6	130	75.4	10.3
	CLMV	29.0	32.2	100	-3.3	-5.3
Northeast Asia		1,389.0	1,186.7	37	202.3	2.9
	Japan	537.5	406.7	20	130.8	2.8
	Korea	257.7	218.8	70	38.9	5.7
	China	593.7	561.1	70	32.6	2.0

Notes: Exports -FOB standard, Imports -CIF standard
      CLMV- Cambodia, Laos, Myanmar, Vietnam
Sources: Global Insight (2005); An and Jeong (2007).

In addition, the export goods structures of nations in the region are quickly growing similar to one another, causing the export competitiveness index to rise, and because the weight of high-tech export goods has increased, the export competition relationship with Japan in

particular has also increased (Jang and Choi 2002). Direct investment and capital movement is rapidly increasing among nations in the region. Therefore, a depreciation of the exchange rate in one nation has a large influence on the export competitiveness of other nations and therefore it is easy to trigger competitive depreciations.

Table 8. Comparison of Regional Trade Reliance of Major Regional Economic Unions

(Unit: %)

Decade	East Asia	EU 25	NAFTA	MERCOSUR
1980	31%	56%	34%	11%
1990	30%	60%	38%	11%
1999	36%	62%	48%	20%
2004	38%	69%	45%	15%

Notes: Total regional trade volume is divided into average volume of exports and
        imports (half of total trade volume).
Sources: IMF, "Direction of Trade Statistics"; An and Jeong (2007).

Emerging East Asian countries (EMEAs) have relied primarily on exports and FDI for their growth, and as export areas are being diversified, they have attached importance to the stabilization of the real effective exchange rate. An increase in exports acts as an engine of economic growth, increasing plant and equipment investment and imports and bringing in advances in technology.

Table 9. Regional Export Volume of East Asia And Major Economic Unions (2004)

(Unit: billion USD)

|	East Asia	EU 25	NAFTA	MERCOSUR	World
East Asia	682.3	314.0	420.7	11.9	1,963.0
EU 25	189.9	2,486.4	338.7	23.4	3,703.3
NAFTA	181.6	195.0	737.6	20.5	1,320.1
World	1,579.7	3,626.0	1,863.4	91.4	9,103.5

Note: 1) FOB export statistics standard.
Sources: IMF, "Direction of Trade Statistics"; An and Jeong (2007).

Developing nations in the region are striving to increase employment and catch up to advanced economies and are therefore seeking to achieve rapid increases in export, investment and economic growth. Exchange rate stability is vital in achieving these objectives.

The majority of trade and capital transactions in the region are conducted in dollars and in Korea, 85 percent of trade and 90 percent of capital transactions are conducted in dollars as well. The dollar is a medium of exchange and, as an instrument for the storage of value, comprises the majority of foreign exchange reserves. Therefore, exchange rate stability with the dollar is most important. The nominal effective exchange rate of the won has fluctuated alongside the won/dollar exchange rate (Figure 1).

Figure 1. Won/Dollar and Nominal Effective Exchange Rate
(Yr 2000 =100)
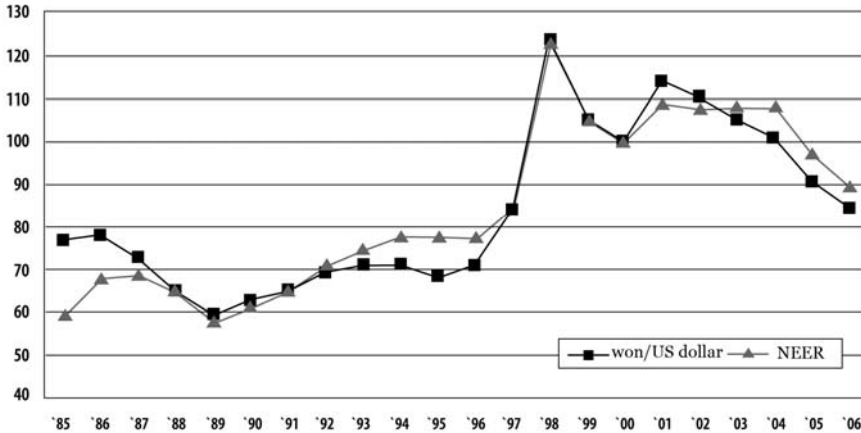
Exchange rate stability with the yen is also very important. In the situation that the yen is strong against the dollar, the yen will also be strong against other East Asian currencies. This is because the exchange rate of EMEAs is strongly connected with the dollar. In this situation, economies of EMEAs will prosper, but in the situation where the yen is weak against the dollar, the currencies of EMEAs will also be weak and this will lead to economic stagnation (Kwon 2004). This is because there is fierce competition between East Asian goods and Japanese goods in the export market. In Korea's export competition, the exchange rate against the yen has a stronger influence than against the dollar.

Exchange rate stability with other nations in the region with which there is an export competitive relationship is also vital. There has been a rapid increase of trade and investment with China and the exchange

rate stability of the RMB is naturally an important element of the regional economy.

If there is a large depreciation induced by a shock suffered by a major nation in the region, neighboring countries cannot avoid a competitive depreciation through contagion.

If a major nation in the region has practically fixed its exchange rate to the dollar, it is difficult for neighboring countries which conduct many transactions with these nations to choose a basket currency system. If nation A has fixed its exchange rate to the dollar and neighboring country B chooses a basket system, fluctuations in the current account of B will be large. This is because the current account of nation B will worsen due to a weaker exchange rate of A relative to that of B in the case of a depreciation of the dollar against the yen, and the current account of nation B will improve due to a stronger exchange rate of A relative to that of B in the case of an appreciation of the dollar against the yen.

Therefore, nations in the region need exchange rate and monetary policy cooperation in order to stabilize the real effective exchange rates. If developing nations in the region wish to stabilize the value of their currency against the dollar and yen, there is a need for stability in the yen/dollar exchange rate. Entering into exchange rate cooperation is an important step to forming a monetary union as that in Europe.

Second, repeated and excessive short-term capital inflows and outflows cause economic instability in EMEAs as financial agencies are underdeveloped. From the beginning of the 1990s until before the fi-

nancial crisis, there were excessive foreign short term capital inflows, causing the overvaluation of the exchange rates, asset inflation, the collapse of asset bubbles and economic crises.

From the first half of the 2000s until 2007, more short-term capital flowed into East Asia than in the 1990s, causing severe bubbles in assets, such as stock prices and real estate, and an overvaluation of the exchange rate. The result in Korea was that many enterprises went into bankruptcy and in the first half of 2007, 211 of 650 small and medium export enterprises (32.5 percent) had operational returns in the red. The break-even exchange rate was 938 won, but the average exchange rate during the first half was 934 won. In the second half of 2007, the average exchange rate fell to 923.5 won by November 11 and profitability was further worsened. Even so, more than 40 percent of small and medium-sized export enterprises did not take any risk management measures.[4] This was because profitability was poor and hedging costs were high.

Until 2005, the Korean government was shouldering interest costs of 7 to 10 trillion won annually accrued through the interest on government bonds and foreign exchange stabilization bonds issued in order to prevent a sharp appreciation of the won. These bond issuances raised the market interest, thereby increasing the inflow of foreign capital.

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4) Korea Export Insurance Corporation (KEIC)(2007).

Figure 2. REER (CPI) and REER (ULC) (yr 2000=100)
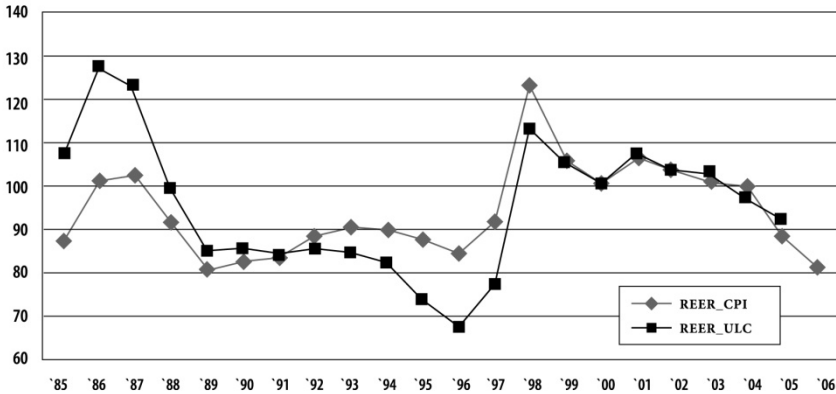
Due to the exorbitant cost of intervention, the government reduced its intervention from 2006. As a result, the recent real effective exchange rate index shows that the exchange rate is overvalued at a level similar to that prior to the 1997 financial crisis, lowering export competitiveness (Figure 2).[5]

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5) Nations included in the calculation of real effective exchange rates (REERs) are as follows. The weight is based on the scale of annual trade with Korea and the base year is 2000. Nine nations - the U.S. (0.393), Japan (0.307), Germany (0.157), the U.K. (0.047), France (0.023), Canada (0.027), Taiwan (0.075), Australia (0.05), Italy (0.021) - accounted for 51 percent of Korea's trade volume in 2000. Statistics on China's unit labor cost index were non-existant and therefore not included. The exchange rate fluctuations of Germany, France, and Italy from 2000 are assumed to be identical with that of the euro. The geometric mean was used in the calculation of the REER. This was done in order to prevent differences in the rates of REER fluctuations caused by changes in the base year.

Other major developing nations in the region are experiencing large appreciations of their exchange rates and overvaluations of real effective exchange rates due to the excessive influx of foreign capital. From 2006 to 2007, the Thai baht appreciated 17 percent against the dollar and began to execute capital controls similar to that of Malaysia in the 1990s. Foreign investors must deposit 30 percent of these capital inflows in the Thailand central bank without accruing interest, and if these funds flow overseas within a one year period, a 10 percent tax is imposed. This applies to all borrowed funds such as bonds and commercial papers in addition to any funds flowing into the stock market.

The majority of nations in the region are shouldering large social costs due to overabundant foreign exchange reserves. These reserves are the result of the purchase of dollars in order to prevent an overvaluation of the exchange rate. In addition, there is the burden of large

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$NEER = \pi(E_i)^{w_i}$, $E_i = w/\$$, $w/¥$, $w/£$ … w_i : trade weight

$REER = \pi(E_i/RCPI)^{w_i}$ 또는 $REER = \pi(E_i/RUCL)^{w_i}$,

$RCPI = \dfrac{CPI_k}{\pi(CPI)^{w_i}}$, $RULC = \dfrac{ULC_k}{\pi(ULC)^{w_i}}$.

Sources: Trade volume - Korea International Trade Association (KITA), "Trade statistics" (http://stat.kita.net).

Consumer price index and exchange rate - IMF, "International Financial statistics."

Taiwan - The Central Bank of the Republic of China, "Taiwan Statistical Data Book" (http://www.cbc.gov.tw).

Unit labor index -"US Bureau of Labor Statistics" (www.bls.gov), unit labor costs in manufacturing, national currency basis.

interest costs accrued through the issuance of government bonds due to governmental sterilization policy.

Due to the low level of technology of the export enterprises in EMEAs and small profit margins, if the exchange rate against the dollar or yen becomes stronger, these EMEAs fall into a deficit, either halting production or necessitating the movement of production overseas.

Prevention of excessive inflows of international short-term capital and resolution of the shortage of liquidity caused by sudden capital outflows is beyond the capability of one nation, and if managed through regional cooperation, it becomes much easier.

Third, there is a large current account disequilibrium between the U.S. and East Asia. At the end of 2006, Japan's current account surplus was 3.7 percent of GDP, China's was 7.2 percent, and the current account deficit of the U.S. was 6.9 percent. This is shown in the credit and liabilities balances of each nation. At the end of 2005, Japan held 1.5 trillion USD of net assets, 33.5 percent of its GDP. China held 287 billion USD of bonds, 12.9 percent of its GDP. The U.S. had 2.6 trillion USD of net debt, 20.4 percent of its GDP. The other side of Japan's current account surplus is its savings. Although household savings has decreased, savings in the non-banking sector has increased. This is because enterprises have been investing heavily in other regions such as the U.S. and Asia instead of distributing earnings to stockholders (Hamada 2007).

Hamada asserts that the current account disequilibrium is natural and that the exchange rate adjustment agreed on in the Plaza Accord is

not an appropriate measure.

"After the 1985 Plaza Accord, Japan's current account surplus severely decreased. It fell from its highest level at 4.3 percent of GDP in 1986 to 1.4 percent of GDP in 1990. The Plaza Accord adjustment brought about undesirable macroeconomic effects. Current account disequilibrium is no longer an exception, but has become the norm. There is no assurance that there can be current account equilibrium because countries have differing rates of time preference. The current account disequilibrium is natural because American consumers prefer early spending and Asians prefer saving and future spending. The inter-temporal trade of goods is profitable for countries with differing rates of time preference. Calculation of the real equilibrium exchange rate is futile because there is no standard upon which to base what are normal levels of current account surpluses or deficits. Policies such as the Plaza Accord or exchange rate adjustments executed in order to resolve the current account disequilibrium are futile and at times, harmful."

He is right in saying that a current account disequilibrium is normal because each nation possesses differing rates of time preference and the policies of the Plaza Accord are not appropriate. He, however, does not suggest a remedy for the present current-account disequilibrium. The current exchange rate system of the world alone cannot correct the large disequilibrium between the USA and Eat Asia properly.

The current international financial architecture is not sustainable. If the current account disequilibrium between the U.S. and Asia con-

tinues or increases, the dollar will crash, interest in the U.S. will rise, and the international economy will stagnate. In addition, the U.S. will have to request a large depreciation of currencies of China and Japan. The sharp depreciation of the yen decided upon through the 1985 Plaza Accord caused long-term stagnation in Japan and financial crisis in East Asia, Russia and Brazil. In addition, continued appreciatory pressures on Japan brought about extremely low interest rates and economic stagnation in Japan and asset inflation in EMEAs, creating a possibility of a repeat of the financial crisis.

Current account disequilibrium may be decreased and exchange rate stability may be achieved effectively through monetary and exchange rate policy coordination and structural adjustment among many nations. Coordinated depreciation against the dollar and/or expansionary economic policy in East Asian countries will reduce the current account disequilibrium. Above all, the limited openness of the agricultural and service markets and the closed markets of distribution are some of important factors in Japan's current account surplus. A rise in the interest rate and rapid structural reform in Japan will render the yen exchange rate more stable and reduce the yen carry trade to Asia.

The closed nature of the agricultural and service sectors, insufficient protection of intellectual property rights, and support and control of state-owned enterprise are important causes for China's current account surplus. The increase of China's social overhead capital investment, increase of investment to keep environmental pollution and yellow sand in check, and structural reform will reduce the current ac-

count surplus to a large extent.

America's excessive fiscal deficit is the main cause of the current account deficit. It is not only a nation's preferences, but also institutions, culture and customs which influence the current account. As the increase of trade under the WTO regime is beneficial to all nations which engage in trade, cooperative efforts must be made toward institutional reform, opening markets, and adjustment of aggregate expenditures, together with exchange rate and monetary cooperation.

Fourth, if the sluggish decision making, insufficient support funds, and improper support conditions of international agencies are taken into consideration, regional financial cooperation is a prudent risk evasion mechanism.

Fifth, a swap financial support program is a core item for dialogue and regional mutual surveillance. The latter brings about the strengthening of cooperation related to the accurate information of neighboring countries, evaluations and expectations of future crises, and policy response.

East Asian nations have foreign exchange reserves reaching upwards of 2.5 trillion USD. East Asian nations are suffering a large social loss because gains from foreign reserves are far lower than the interest costs used to pay off the national debt accumulated through governmental intervention. The arrangement of a regional safety net for exchange rate stability through measures such as the creation of a joint fund and swaps may reduce each nation's necessary amount of foreign reserves. Each nation can resolve the asymmetry between the domestic

market and large international financial enterprises through the provision of swap and financial support measures between nations in the region (Henning 2002).

Sixth, financial cooperation facilitates regional political harmony. It raises the economic cost of political conflict and thereby works as an incentive for the peaceful settlement of disputes.

Seventh, financial cooperation provides Asian influence in negotiations concerning the international financial order in international organizations.

VI. Exchange Rate Cooperation in East Asia: Flexible BBC System

1. Basket currency system

Mundell (2000) proposed the selection of a dollar standard system for East Asia and Japan as East Asia and Japan desire exchange rate stability against the dollar. The dollar appreciations from 1995 to 2001 caused currencies linked to the dollar to be strong and therefore may be indicated as one of the causes of the East Asian foreign exchange crisis. There are scholars who propose that the yen should be applied as the standard currency, as Japan has the money issuing power to provide liquidity in the time of crisis (Moon, Yoon, and Lee 2000). However, the exchange rate fluctuations of the yen are considerable. If the exchange rate is fixed to either the dollar or the yen, fluctuations of the effective exchange rate are large when the yen/dollar or euro/dollar exchange rate fluctuations are severe, rendering trade unstable. There are several basket currency proposals in order to stabilize the effective exchange rate.

The basket currency system stabilizes the real effective exchange rates of East Asian nations, whose trading partners are diverse, and thus their trade competitiveness as well. In addition, if many nations choose it in cooperation and adjust their exchange rate policy, they can protect against competitive depreciation. The BBC system is also more effective than pegging exchange rates to the USD in slowing capital

influx in the region. In particular, this has a larger effect on bank lending than FDI or securities investment (Ogawa *et al*. 2004).

The following section reviews the proposed currency baskets and attempts to discuss a more appropriate basket.

First, Williamson (1999a, b), Kawai and Tagagi (2000) and Ogawa and Ito (2002) propose that East Asia (with the exclusion of Japan) should choose a BBC exchange rate system and G-3 basket. At the 3rd ASEM (Asia Europe Meeting) Finance Ministers Meeting held in Kobe, Japan in January 2001, it was also decided that it would be desirable for East Asian nations (with the exclusion of Japan) to use a currency basket which include the dollar, euro, and yen. [6]

They proposed that the central rate of each currency be connected to a basket composed of the three currencies.

Of ASEAN+3 and Taiwan, nations which may participate in an East Asian exchange rate cooperation system from the first stage, excluding nations with weak economies and politically unstable Indonesia, are total nine countries: the original five countries of ASEAN (Thailand, the Philippines, Singapore, Malaysia, and Brunei) and Korea, China, Japan, and Taiwan. Australia, New Zealand may also participate from the early stages as well.

Williamson proposes a common basket, giving the dollar a weight of 40 percent and 30 percent each to the yen and euro, setting a fixed band around a central rate with the basket currencies and stabilizing the effective exchange rate within the band. This prevents competitive

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6) Member nations are the countries of ASEAN and 15 countries of the EU.

depreciation, sudden fluctuations of the effective exchange rate of nations in the region even when the exchange rate fluctuations of major currencies are severe, and provides elasticity by allowing the exchange rate to move within the fixed range in order to promote trade, FDI, and economic development.

The problem of this proposal is the stability of the exchange rate between East Asian nations when the currencies of these nations choose differing bands. In addition, the yen is classified as an external currency and therefore, the value of each currency to the yen may be uncertain and it is difficult to depend on the relief function of the yen during regional currency crises.

Second, Jo and Kim (2001) propose collectively pegging each East Asian currency to a currency basket comprised of the dollar and yen. However, the euro area is also one of East Asia's important trading partners and including the euro would further stabilize the effective exchange rate all the more.

Third, Kwon (2004) proposes an East Asian currency basket, including the yen, but allows for the ideal weight of the yen in the basket to differ between countries. This proposal emphasizes the stability of the currencies of East Asian nations against the yen. However, if the dollar and euro are excluded, effective exchange rate stability is difficult.

Fourth, Frankel (2003) proposes that EMEAs peg to the Singapore dollar. This plan attempts to eliminate many difficulties surrounding the creation and management of a common currency basket, such as determining weights and basket management, by stabilizing the effec-

tive exchange rate to the existent and globally familiar Singapore dollar. This entails the proper distribution of seigniorage given to Singapore.

The Singapore dollar is linked to a currency basket of major trading partners and Asian competitive economies, operating within a narrow band, and its effective exchange rate has been managed stably. In recent years, it has been maintained within a ±2 percent band with an annual average appreciation of 2 percent. However, Singapore has politically unstable relationships with Indonesia and Malaysia, is a service industry-centered economy, and its financial industry is relatively highly developed, and therefore, its economic structure is drastically different with other East Asian countries. In addition, it is not suitable for large-scale economies such as China, Korea, and Taiwan to peg to the currency of Singapore whose economic scale is small. This is because the Singapore economy is highly reliant on the East Asian economy.

In addition, it may be unreasonable for East Asian nations to jointly choose to link their currencies to the Singapore dollar because the weights of the currency basket the Singapore dollar is linked with has been determined in accordance with weights of trade of Singapore.

Fifth, Ogawa *et al*. (2004) proposed a common currency basket composed of the dollar, yen, euro and the currencies of participating nations, and participating nations are directly linked to a common currency unit identical to that basket. Each nation sets a band around the central rate of the basket currency and allows its effective exchange rate to move within that band.

Ogawa *et al.* proposed executing the above basket currency method in the following two stages to facilitate its implementation. The monetary authorities use an ACU (Asian Currency Unit) as the common currency unit, comprised of the currencies of the regional participating countries as the ECU. The yen is not included in the regional currency basket. Each nation links its currency to the ACU within set bands. In the second stage, the monetary authorities cooperate and link the ACU to a currency basket consisting of the yen, dollar, and euro. Alternatively, in the second stage, the participating nations create a regional agency and the agency links the ACU to the currency basket consisting of the yen, dollar, and euro. In this case, all the monetary authorities of each nation have to do is link their currency to the ACU.

Of the above five plans, the two-stage execution plan in the fifth is thought to be most appropriate. Exchange rates of emerging East Asian countries will be stable among themselves and their effective exchange rates against the dollar, yen and euro will be stabilized. However, when the yen is depreciated against the dollar to a large degree, only a small portion of the magnitude of depreciation will be reflected in the exchange rate adjustments of the member countries. If the yen is included in the regional basket (ACU), exchange rates of EMEAs against the yen will be stabilized more easily and currencies of East Asian countries can be appreciated against the dollar by the same degree more easily by appreciating the ACU for the purpose of reducing the current account deficit of the U.S.. Also Japan's crucial role can be expected in the case of the liquidity crisis in the region.

There is a discussion on whether to include the yen in the regional basket or in the external currency basket. The argument for including the yen in the regional basket is that Japan may provide liquidity in times of need for regional exchange rate stability. The argument for excluding the yen is that the yen prefers a floating exchange rate system and will dominate the regional common currency unit if it is included in the regional basket. Furthermore, it is doubtful that the yen will have the ability to sufficiently provide liquidity during regional crises as Germany in the EMS (Park and Yang 2006).

Ogawa *et al*. excludes the yen from the regional basket but I think its inclusion in the basket is more natural and better for the region. Japan can play important role from the initial stage of the exchange rate coordination in the region and in the steps toward a currency union.

It is proper that the GDP applied when the basket weights are calculated should be based on the purchasing power parity (PPP) exchange rate and if the PPP-based GDP and trade volume are used to calculate the weights, the weights of the yen and RMB will be similar and Japan will not have a dominant place in the equation. The yen and RMB will have much influence over the ACU as they have the largest weights. The role of Japan and China in the event of a liquidity crisis is important and because Japan has a particularly important role, it would be beneficial to include the yen in the regional currency basket.

If the member nations use foreign reserves to create an exchange rate stability fund, the burden of Japan and China may be lessened. East Asian nations will coordinate their exchange rates to the ACU,

and thereby regional currencies will achieve exchange rate stability with the yen and the RMB. After the initial testing period, it is desirable for member nations to set up common bands for the ACU. It would also be beneficial for the ACU to be linked to an external basket consisting of the dollar and euro with fixed bands.

The first stage of this plan is similar to that of the EMS in Europe, however, the second stage differs. During the period from 1979 to 1998, the EU created the EMS and each nation linked its currency to the European Currency Unit (ECU). The ECU was composed of EMS currencies. Each currency was connected to the ECU with bands and it was allowed for the ECU to float with regard to the dollar, yen and any other currency. The monetary authorities had an obligation to intervene in the foreign exchange market in order to stabilize their exchange rates with regard to other EMS currencies within the band. EMS nations moved from an exchange rate with a wide band to a single currency system.

When linking each currency to the ACU in the early stage of executing the basket system, the central rate and band had better not be announced but autonomously determined and managed, raising the market's confidence in the exchange rate policy. The central rate and band are regularly adjusted to fit the economic conditions, and the future exchange rate policy direction is announced. In the stage of enhanced market confidence in the exchange rate policy and strengthened regional exchange rate cooperation, it may be beneficial to announce parameters for the sake of transparency.

Governments will stabilize exchange rates within the band and if participating nations cooperate with one another and gain the confidence of the market, the market will know that there will be governmental intervention when the exchange rate reaches the upper or lower limit and aid in recovering the exchange rate to the central rate. This is the stabilizing effect of speculation.

The ACU will be the regional common currency unit, and may be used as the denomination of economic transactions such as trade and capital transactions or assets such as foreign reserves, and may be used to measure the extent of deviation each currency's exchange rate strays from the regional average (Kuroda and Kawai 2003).

2. Flexible bands

Williamson (2000) proposed a flexible BBC (basket, band, crawl) system and monitoring band system. This system stresses the flexibility of the band of the currency basket system in order to prevent the onset of foreign exchange crisis. If the BBC system is to attain market confidence, it must maintain trust by the government's determination and the protection of the exchange rates as announced. However, it must permit short-term movements outside of the band margins when speculative forces are strong, and provide for intervention to return the exchange rate within the band in the medium and long-term when speculative forces weaken. This elasticity may prevent foreign exchange crises which occur through the depletion of foreign reserves.

The government shall announce a neutral effective exchange rate estimated as an equilibrium exchange rate and a wide band which provides a scale of movement for that rate. Outside of this, the government may intervene, however, there is no obligation to do so. If the exchange rate equilibrium is announced, the transparency of exchange rate policy may be maintained, and market surveillance of the appropriate exchange rate is possible. Stability may be maintained through the convergence of market expectations to the equilibrium exchange rate through the effect of the announcement. Through exchange rate stability, the profitability of enterprises is raised and the possibility of profitability expectations is also raised. Current account equilibrium may be achieved in the medium range and the external equilibrium as well through the maintenance of an appropriate exchange rate.

A wide band of ±10 percent, for example, should be set around the equilibrium. The reasons for setting a wide band are as follows (Williamson 2000).

First, the equilibrium exchange rate cannot be precisely measured.

Second, parity, the central rate of the band, should be adjusted in order to reflect market fundamentals so as not to cause expectations of discretionary exchange rate fluctuation.

Third, it should enable the use of independent monetary policy.

Fourth, it should be able to tackle temporary and intense capital influx forces. If the band gains market confidence, arbitragers will assist in recovering the exchange rate to parity. The market will assist in returning the exchange rate to the central rate as it expects governmental

intervention at the upper and lower limits of the band. The market will stabilize speculation.

Furthermore, when investors in the traded goods industry evaluate new investment projects, they look at the parity exchange rate rather than the market exchange rate. Even when the exchange rate deviates from the equilibrium exchange rate, the distorting influence on investment decisions is curtailed.

If we refer to the experience of the EMS in maintaining a wide band until the shift to a common currency in 1999, it appears that a considerably wide band must be maintained by East Asian nations until the transition to a common currency.

3. Crawl method

Crawl signifies the adjustment of the central rate in order to neutralize differences in inflation rates and reflect differences in productivity. Williamson and Kawai assert that real effective exchange rate fluctuations calculated using domestic and foreign price indices should be reflected in the crawl.

However, this real effective exchange rate fails to fully reflect export competitiveness of a country. This is because trade liberalization has been advanced and the difference in the rates of price increase among countries is not large, however, the difference between the rate of increase of wages and the rate of increase of unit labor cost indexes is large. Changes in wages and unit labor costs heavily influence interna-

tional export competitiveness because export industries in developing countries import the majority of their productive inputs overseas and costs of these inputs are similar to most exporting nations.

Therefore, when the difference between the rate of increase of wages and price is large, using unit labor cost indices instead of price indices in calculating real effective exchange rate indices is more appropriate. This is further discussed in detail in the next section.

Williamson and Kawai et al. have not clearly outlined the estimation method for the equilibrium exchange rate. The equilibrium exchange rate must be an exchange rate which keeps the current account in equilibrium for the medium and long term and reflects changes in economic fundamentals. It may be calculated as an exchange rate which maintains the real effective exchange rate at an equal level as past period in which the current account was in equilibrium. It must take in consideration changes in economic conditions such as terms of trade.

Propriety of consumer price index REER and unit labor index REER as export competitiveness indices

Crawl within the band occurs in response to foreign exchange supply and demand and BBC system proponents propose an additional crawl reflecting changes in economic fundamentals or differences in domestic and external inflation (Williamson 1999; Kawai 2002).

These proponents lay stress on fluctuations of the real effective exchange rate which uses price index as a deflator in order to uniformly

maintain export competitiveness. However, when the rate of increase of price and wages are drastically different, it is beneficial to use the real effective exchange rate calculated using the unit labor cost index which reflects relatively better the differences in domestic and foreign production costs. In EMEAs and advanced nation trading partners, trade liberalization has advanced and differences in price changes are not significant, however, differences in the rate of change of wages and unit labor cost index are large. The few years preceding the 1997-98 financial crisis was a immensely harmful period for the competitiveness of the Korean export industry. If we look at the real exchange rate index using the consumer price index (CPI) as seen in Figure 2, the REER of the first half of the 1990s was similar to 1985, 1989 and 1990 and therefore an overvaluation situation cannot be seen. However, if we look at the REER using unit labor cost index (ULC), we can see that in the years preceding the financial crisis, the overvaluation of the won was large and continued to worsen after 1986. From the mid-1980s, wages in Korea rose rapidly and export competitiveness largely worsened, however, prices gradually rose and the REER based on prices does not show a steep decline of export profitability.

Figure 3 shows fluctuations in RULC (domestic ULC/average ULC of major export partners) and RCPI (domestic CPI/CPI of major trading partners). It shows that the RULC rose considerably faster than RCPI in Korea until 1996.

By employing REER (CPI), the real effective exchange rate of 1996 appreciated by 3.7 percent compared to that of 1985, while the real ef-

fective exchange rate of 1995 is similar to that of 1985. However, by employing REER (ULC), the real effective exchange rate in 1996 appreciated 36.5 percent compared to 1985 and in 1995, appreciated 31.1 percent, showing a large loss of export competitiveness. This was well reflected in the condition of export enterprises at the time. It shows materially that the won has appreciated to this extent in relation to the average of exchange rates of currencies of its export trading partners.

Figure 4 shows how the REER (ULC) index explains fluctuations in the trade account better than the REER (CPI) index, particularly from the late 1980s to the 1997-98 financial crisis, when wages rose to a great extent.

Many Western scholars including Ann Kruger and McKinnon assert that there was not an exchange rate overvaluation in Korea and other East Asian nations which experienced the financial crisis, on the basis of results from the real effective exchange rates calculated with wholesale prices and CPIs. This is because they have not taken into consideration the sudden rise in wages in the boom period of the late 1980s and the first half of the 1990s in these countries.

Figure 3. Relative CPI (RCPI) and Relative ULC (RULC)
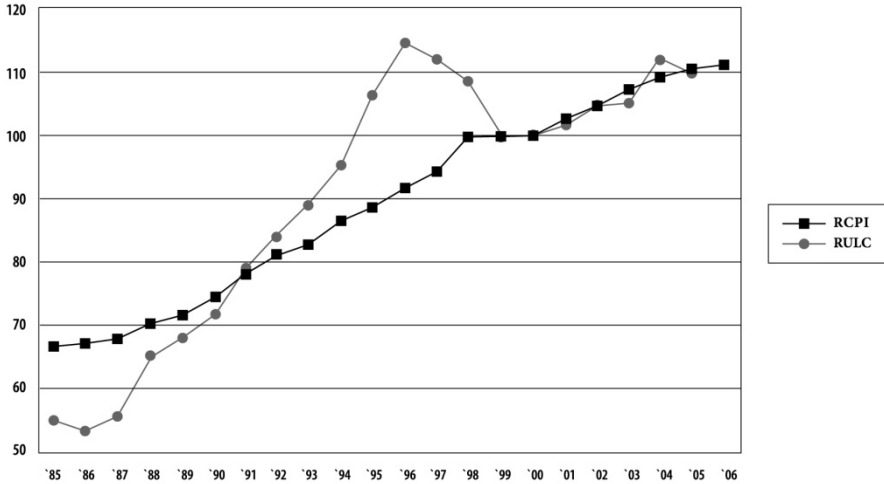
After the financial crisis, the fluctuations of the two REER indices in Korea were similar (Figure 4). The reason is that during this period, enterprises took measures to reduce production costs by laying off many workers and replacing them with atypical workers, and it is be-cause of these efforts for improving productivity that the rate of in-crease of the ULC and CPI are similar after the financial crisis (Figure 3). Changes in economic fundamentals such as trade conditions must also be reflected in the crawl.

Figure 4. REER (ULC), REER (CPI) and the Trade Account
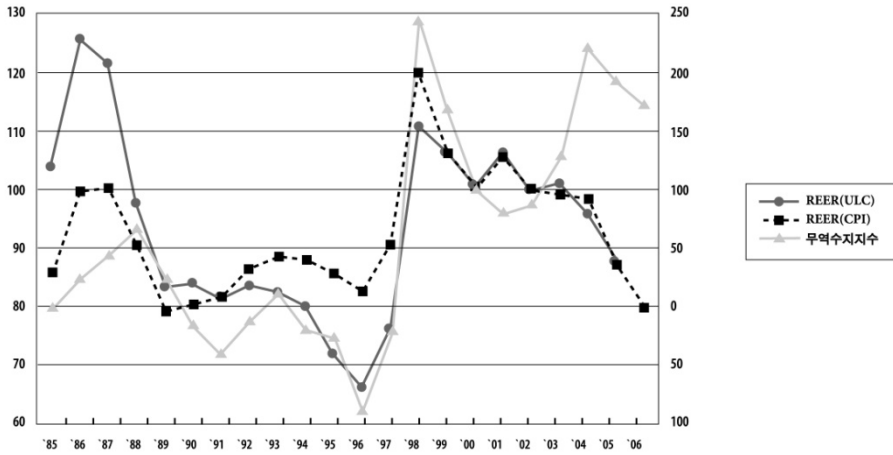
VII. Fixing the yen/Dollar Exchange Rate within a Band

The above flexible BBC system in East Asian countries could help stabilize real effective exchange rates, and excessive short term capital flows will be less in the region. However, Japan may be constantly pressured to appreciate the yen by the U.S., and expectations of appreciation of the yen will keep interest rates of Japan low, which will cause the yen-carry trade in East Asia.

Thus in addition to the above flexible BBC system, the yen/dollar exchange rate can be fixed within a band in the short- and medium-run, fixing it in the long-run, and linking or pegging the ACU (including the yen) to the basket of the dollar and the euro. It will further reduce excessive capital flows in the region.

There is a need for stability of the yen/dollar exchange rate in order to stabilize the exchange rates of nations in the regional currency bloc with the dollar and yen and to prevent the sudden flow of international funds stemming from the yen-carry trade caused by Japan's low interest and a weak yen and settlement of that trade. Wide fluctuation of the exchange rate of yen against the dollar has been one of the main factors destabilizing financial markets and causing financial crises in East Asia. Wide fluctuation of the value of the yen against the dollar comes from very low interest rate of yen compared with interest rate of the dollar. The interest rate of yen assets has been historically 3 to 5 percent lower than the interest rate of dollar assets. The US pressure for

appreciation of the yen brings very low interest rate in Japan, which yields yen-carry trade and weak yen, coupled with expectation of an appreciation of the yen. The reasons for this difference in the interest rates are as follows.

First, the expectations of an appreciation of the yen against the dollar. This is the result of occasional appreciatory pressures from the U.S. since 1971.

Second, the risk felt by Japanese financial institutions holding large dollar asset stock. Due to a long period of current account surplus in the past, these dollar assets accumulated. The negative risk premium has caused the interest rate of yen assets to be lower than the interest rate of dollar assets because the yen value of these dollar assets changes with the exchange rate (McKinnon 2004).

When the interest rate of the U.S. is low, Japan experiences a zero interest rate. The Japanese interest rate is far lower than the interest rate of EMEAs. When the exchange rate of the yen is weak and uncertain to East Asian currencies, foreign capital excessively flows into East Asia through the yen-carry trade as in the 2005 to 2007 period. Fluctuations of the yen/dollar exchange rate must be minimized as well as the difference in interest rates between the U.S. and Japan in order to prevent excessive inflows of yen funds into East Asia.

If the yen is expected to be 3 to 5 percent strong against the dollar in the future due to the continuous pressure by the US for appreciation of the yen, the ACU, which includes the yen, and East Asian currencies linked to the ACU will be considerably strong as well. Therefore, in

order to stabilize the exchange rate effectively in East Asia including Japan, there must be yen/dollar exchange rate stability.

McKinnon (2004) proposed a dollar standard with the following content in order to fix the yen and dollar exchange rate within a narrow range in the medium run and a fixed level in the long-run. The medium and long-term benchmark (parity) exchange rate is set as the purchasing power parity (PPP) level (e.g., 1 USD=115 yen) and in order to maintain this exchange rate for the medium and long-run, the two nations will firmly intervene to recover the parity exchange rate. In the short-run, intervention will only take place when the exchange rate deviates from the parity exchange rate to a large degree. The U.S. and Japan conclude an agreement, deciding to refrain from requesting a change in the yen/dollar exchange rate in order to resolve trade disputes and instead attempt to resolve trade disputes through other methods such as FTAs and market openness. Then Japan can raise its nominal interest rate to the level of the U.S. and escape the liquidity trap.

The Japanese government has the duty of adjusting domestic money supply in order to maintain yen/dollar benchmark parity. The U.S. adjusts its money supply in order to stabilize domestic price levels. If long-run exchange rate stability is maintained, expectations of exchange rate fluctuations diminish and the scale of those fluctuations also diminishes. The price level in the U.S. acts as an anchor to which Japan must adjust.

The long-run exchange rate fixing between the yen and dollar will reduce short and medium-run yen/dollar exchange rate fluctuations

and shorten the deviation period from the parity exchange rate. In addition, it may prevent the zero interest rate of the yen which occurs when the interest rate in the U.S. is low. The difference in interest rates of EMEAs, which have high growth rates and interest rates, and Japan reduces, removing the incentive for excessive inflow of short-term capital in the region. This reforms the financial fragility of EMEAs and may remove the business cycles in East Asia caused by fluctuations in the yen/dollar exchange rate (McKinnon 2004).

Figure 5. Yen/USD Exchange Rate Trends

McKinnon does not elucidate how long a period is long-term. If we look at the long-term shifts in the yen/dollar exchange rate, they are as seen in Figure 5, and if we divide the trend into appreciation and depreciation periods, they are as follows. The exchange rate of the yen/dollar has repeated ups and downs by the magnitude of 23 to 80 yen in the uphills and downhills each in the period of two to five years.

Appreciation: February 1985-January 1988 (263.7 yen-120.5 yen)
Depreciation: January 1988-April 1990 (120.5-160.4)
Appreciation: April 1990-April 1995 (160.5-79.8)
Depreciation: April 1995-August 1998 (79.8-147.6)
Appreciation: August 1998-November 1999 (147.6-101.2)
Depreciation: November 1999-January 2002 (101.2-135.2)
Appreciation: January 2002-January 2005 (135.2-101.7)
Depreciation: January 2005-June 2007 (101.7-124.1)

In the 20 years since 1988, the value of the yen against the dollar has repeatedly risen and fallen around a value of approximately 115 yen and there has been no long-term tendencies for either appreciation or depreciation. In addition to setting up a narrow band around the central rate in the medium run and fixing the yen/dollar rate in the long run, the yen/dollar rate needs to be stabilized in the short run also.

McKinnon proposed that the government intervenes only in cases where the exchange rate excessively deviates from parity in the short-run, however, he does not elucidate concretely how much deviation is excessive and how much deviation is allowed. McKinnon proposed to fix the long-run exchange rate. Actually the market long-run average exchange rate has been around 1 USD = 115 yen throughout the past 20 years.

Short-term fluctuations of the yen/dollar rate may be stabilized by adopting a target zone exchange rate system which sets a standard band (e.g. ±2.5 percent) around the yen/dollar PPP exchange rate and

allows the market exchange rate to move within that band, and calls for both parties to take firm action to prevent movement beyond the limits of the band. As it is difficult to accurately infer the equilibrium exchange rate and fundamentals change, if the exchange rate is allowed to fluctuate within a fixed range according to changes in foreign exchange supply and demand, it will provide elasticity for exchange rate fluctuations. Movement of the exchange rate outside the band may be temporarily allowed when speculative forces are particularly strong and the government may intervene to stabilize the exchange rate within the band when speculative forces weaken. Efforts to stabilize the exchange rate must be taken in cooperation of both countries.

For stabilizing exchange rates of EMEAs McKinnon proposed long-term fixing of exchange rates of EMEAs against the dollar. However, it is not a realistic proposal since the inflation rates of EMEAs are much higher than the inflation rate of the U.S.. Exchange rates of EMEAs could be linked to ACU with bands and ACU be pegged or linked to the basket of the yen and the dollar. In this case the yen is included in the outside basket, but not in the regional basket. Then exchange rates of EMEAs will be stable among themselves, and with the yen and the dollar. Currencies of EMEAs and the yen and the dollar float against the euro. If the outside basket includes the euro in addition to the yen and dollar, the effective exchange rate of EMEAs will be more stable than otherwise, however, exchange rates of EMEAs will become less stable against the yen and dollar.

Continued current account surpluses in Japan and East Asia and

current account deficits in the U.S. are due to a lack of spending in the former and an excess of spending in the latter. Therefore, an increase of investment and consumption in East Asia and Japan, and an increase in savings and reduction of consumption in the U.S. are needed for re-solving the financial disequilibrium between the two regions. A drastic appreciation of the yen and RMB would temporarily bring improve-ment to the U.S. current account, however, it would cause a reduced equilibrium by lowering investment, income, and savings and causing economic stagnation in Japan, China and neighboring countries. Ex-change adjustment will help reduce the financial disequilibrium only partially.

VIII. Adjustment of Policy Bank Rate

The exchange rate may also be stabilized through adjustment of the policy bank rate. If the difference between the average policy bank rates of advanced nations and Japan is brought within a fixed band and the difference between the policy bank rate of each East Asian nation and the average bank rate of advanced nations including Japan is brought within a fixed band, exchange rate stability may also be attained within a fixed limit in the EMEAs and the excessive influx of foreign short-term capital such as the yen-carry trade into EMEAs may be prevented.

During the period from 2003 to 2007, the average policy bank rate of Japan and advanced nations (the U.S., euro area, and Australia) increased from 2.6 percent to 4.7 percent, and during the same period, Tokyo branches of foreign banks sent approximately 22 trillion yen to the head offices in the home countries. Particularly during the 2005-2007 period when the bank rate difference was large, 16 trillion yen was sent overseas and used for hedge funds and financial institution investment funds. This is part of the yen-carry trade.[7]

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7) Hattori and Shin (2007).

IX. Economic Policy Support for the BBC System

1. The Experience of Singapore with the BBC System

Singapore has successfully employed an elastic BBC system since the early 1980s. The exchange rate is the monetary policy instrument and the ultimate goal is price stability. The parity exchange rate is decided through a basket of currencies from major trading partners and competing economies. In order to provide elasticity to exchange rate fluctuations, the exchange rate is allowed to fluctuate within bands set around a central rate. The currency basket, central rate, and bands are not publicly disclosed. Conforming the real effective exchange rate with macroeconomic fundamentals is the core of the BBC system. The differences in domestic and foreign inflation are adjusted through a crawl of the nominal effective exchange rate.

The exchange rate is allowed to fluctuate within the policy band, the monetary authorities are to review parity and band regularly, and the exchange rate is changed if deemed necessary in accordance with changes in the market environment and disclosed to the market every six months. The band accommodates short-term fluctuations in the foreign exchange market and provides a mechanism for flexibility in exchange rate management.

During the period from 1990 to 1997, the Singapore dollar (SGD) appreciated gradually, and the NEER appreciated by 31 percent. The

reason for this was to reduce economic overheating and inflationary pressures and to promote structural reform toward less price-sensitive economic activities and high value added industries. Prior to the financial crisis, the growth rate in the 1990s was 8 percent per annum. After the financial crisis until April 2004, the strong currency policy was halted due to the sudden slowdown of economic growth and global deflation. In October 2001, they expanded the band, increasing the elasticity of the exchange rate, and when the economic environment stabilized, narrowed the band once again. If the exchange rate moved outside of the band, the monetary authority facilitated the return of the exchange rate within the band through foreign exchange transactions.

The monetary authority kept the effective exchange rate consistent with economic fundamentals in the long-run and used it as an anti-cyclical policy instrument to reduce the gaps in inflation and production in the short-run. During a period of economic stagnation, a large-scale production cost reduction policy was employed as a supply-side tool in order to depreciate the real effective exchange rate. That is, corporate expenses were reduced through the reduction of wages, price, corporate tax rate, land costs and the reduction of employee funds such as the national pension fund and forced savings fund. In this way, a depreciation of the exchange rate in order to promote short-term competitiveness was avoided. The high elasticity of the product and productive factors market protected the economy against economic shocks and aided in recovering the real effective exchange rate to the long-run equilibrium exchange rate (Caboli 2006).

In employing monetary policy centered around the exchange rate, the government relinquishes control of the interest rate. The interest rate is primarily determined by investors' expectations of the future fluctuations of the Singapore dollar and international interest rate. The interest rate has been lower than the U.S. bank rate in the majority of cases, and there have been expectations of a appreciation of the Singapore dollar. The exchange rate and bank rate have been well represented by an uncovered interest parity relationship. In the last several years, the nominal effective exchange rate of the Singapore dollar has had a trend of an average annual 2 percent appreciation and fluctuates within a ±2 percent band (Figure 6). From the beginning of 2000, Singapore has used the GIC (The Government of Singapore Investment Corporation) and Tamasec to promote capital outflows for foreign investment and manage with foreign capital inflows.

The Singapore dollar has shown a continual appreciation trend against the USD and other major currencies (with the exception of the yen), and the nominal effective exchange rate has shown more stability than the NEERs of the USD and yen. In particular, the fluctuations of the SGD against the USD and yen have been fewer than the fluctuations between other major currencies. The consumer price index of Singapore has also shown far more stability than that of the OECD and Hong Kong.

Figure 6. Singapore Dollar Nominal Effective Exchange Rate
Fluctuations and Band
(1 April, 2005=100)
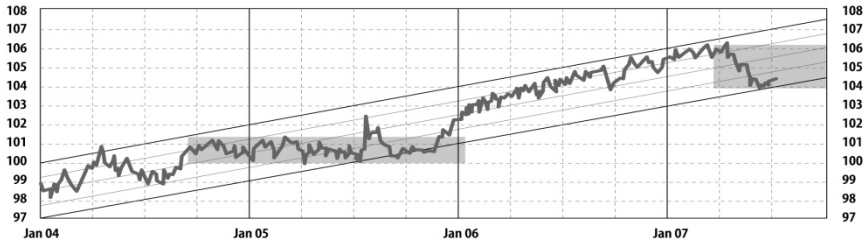
Source: DBS (2007).

The Singapore monetary authorities point out that macro- and microeconomic policy and strong financial institutions which support the exchange rate are more important than an appropriate exchange rate system in exchange rate management (EE *et al*. 2004).

First, the economy needs a sound, consistent, and reliable macroeconomic policy in order to prevent the increase of macroeconomic disequilibrium. This minimizes economic fragility caused by sudden changes in capital flow. Close cooperation between policy authorities is furthermore important. Through prudent financial and fiscal policy and fiscal surpluses, the central bank may devote itself wholly to price stability.

Market confidence is raised through low inflation and consistent economic growth, and speculative attacks on the currency are prevented through a large amount of foreign reserves, prudent macroeconomic policy, and prudent loans to extra-regional financial institutions.

Domestic banks and enterprises generally do not borrow from overseas lenders because the public sector does not use foreign loans and the domestic interest rate is low. During the financial crisis, the currency was able to withstand speculative attacks, contagion and trade condition shocks because there is no fragility on the balance sheet.

Second, development of financial institutions and financial systems is vital. The GIC and Tamasec were able to resolve the excessive capital inflow problem by channeling capital which flowed into the domestic economy into foreign investments through excellent financial techniques such as mergers and acquisitions. Economic shocks were easily overcome due to the sound and effective banking system and a capital market which was deep and abundant with liquidity.

Third, regulatory and supervisory faculties to increase the complexity of financial reform and financial institution activities and handle new products and services must be sufficiently developed.

Fourth, disclosure and transparency must be further strengthened in order to strengthen market discipline. Singapore publishes biannual reports on monetary and exchange rate policy in order to assist the market in understanding its policy. The important thing is to gain general confidence in monetary policy.

2. Sound and consistent policy

As in the case of Singapore, East Asian nations may seek exchange rate stability by choosing a BBC system either individually or as a joint

effort of some nations. In order to do this, it must be supported by sound, consistent and reliable macro- and microeconomic policy. Price stability, prudent financial policy, advancement of financial institutions and systems and supervisory efficiency are necessary and policies must have a medium and long-range outlook, objectives and consistency. If many nations in the region cooperate, jointly choosing a BBC system and establishing working rules and the investigation and supervision of regional economies and policies are thoroughly executed, the exchange rate policy will enjoy a higher rate of success.

Both a fixed exchange rate and independent monetary policy cannot be attained if the movement of capital is liberalized. The discretion of independent monetary policy is small if the exchange rate is to be fixed within bands, and therefore, bank rate control must be relinquished, and excessive capital flows must be limited. The domestic bank rate must move in accordance with fluctuations in the international bank rate because the domestic bank rate cannot differ with the international bank rate beyond a fixed range, and the domestic policy bank rate must also change in step with the fluctuations of the international policy bank rate.

In recent years, EMEAs have been experiencing excessive asset inflation and exchange rate overvaluation due to the large influx of foreign short-term capital. The risk is larger due to weak financial institutions and capital markets. There is a need for consistent policy. There will be an even larger increase in capital inflows if the bank rate is increased in order to suppress asset inflation. Fiscal tightening, an inter-

est rate similar to the international rate, increase of price and wage elasticity, application of supply-side tools, suppression of foreign capital inflows, and outflows of capital must be planned if the exchange rate of each nation is to be stabilized within a fixed range. Controls on excessive short-term capital inflows may also be appropriately applied. If nations in the region jointly maintain capital controls, the shock on cooperating nations is small and the margin for tax evasion is also small. These arguments apply to a BBC exchange rate system as well.

If East Asia wishes to expand into a monetary union, a BBC exchange rate system is a natural intermediary step. Under a BBC system, the exchange rate is stabilized, however, the competition between domestic financial institutions and global financial institutions becomes fierce as participating nations lose control over domestic bank rates and the bank rates must be left to the mercy of the international bank rate. Therefore, there is a need for the strengthening of financial institutions, system, and supervisory instruments and financial reform. When the inflow of foreign short-term capital is large, the government will try to see that domestic financial institutions increase foreign investment in order to stabilize the exchange rate. Therefore, financial institutions must greatly increase foreign investment and cultivate their ability to sufficiently compete overseas with foreign financial institutions. If the international competitiveness of financial institutions is weak, the government cannot help but to rely on financial regulation to stabilize the currency in the event that there is an excessive inflow of foreign capital. If that is not done, the survival of manufacturing industries in

the traded goods sector is difficult. The government of Singapore recommended the increase of foreign investment of its financial institutions from the early 2000s in the face of increasing inflows of foreign capital.

After the financial crisis, Korea, Thailand, Indonesia, and the Philippines chose to institute inflation targeting, and through it, pursued policy to influence the exchange rate. However, liquidity and loan management were neglected, and they were unsuccessful in keeping inflation of assets such as real estate under control. Policy rules for exchange rate stability must be disclosed and efforts taken to maintain an exchange rate which can sustain current account stability in the medium and long-run.

There has been a debate on whether there exists a contradiction between an inflation targeting system and a basket currency system. In the case that the target inflation rate matches the weighted average of inflation rates of nations included in the basket currency and the inflation weight and currency basket weight are equal, a basket band system would be consistent with an inflation   targeting system. In most cases, the monetary policy directions of the two systems do not contradict each other (Kawai and Takagi 2000; Ogawa *et al*. 2004).

First, let's assume that an economy in equilibrium has received appreciatory pressures through external shocks such as capital inflows, and the exchange rate has appreciated to limit of its band. Its export competitiveness weakens and the prices of its imports falls. From the basket aspect, it attempts to eliminate appreciatory pressures by reduc-

ing its bank rate in order to promote capital outflows. From the inflation targeting side, it also prefers to reduce its bank rate in order to eliminate deflationary pressures and therefore, there is no contradiction.

Second, let's assume that it has received severe depreciatory pressures through international capital outflows or a stagnation of the export market, and the exchange rate has depreciated to the limit of its band. Although export competitiveness rises, there is pressure for prices to rise as well. From the basket side, it attempts to eliminate the excessive depreciatory shock through raising its bank rate. From the inflation targeting side, it also pursues a raising of its bank rate through austere monetary policy in order to eliminate pressures to raise prices and decrease total demand.

Third, let's assume that there is a domestic inflation shock due to an unexpected increase in total demand. From the basket side, as excess demand and a rise in prices induce depreciation, it attempts to recover the exchange rate to a desirable level by eliminating pressures to raise prices through a reduction of total demand and appreciation of the exchange rate by raising the interest rate. From the inflation targeting side, it attempts to eliminate inflationary pressures through deflation and raising the interest rate.

Fourth, let's assume that there is a supply reduction shock such as a loss of production facilities or natural disasters. From the basket side, it faces a drop in production, rise in prices, economic stagnation, a worsening of the current account and depreciation by eliminating depre-

ciatory pressures through raising the interest rate to achieve exchange rate stability. From the inflation targeting side, it attempts to reduce the rise in prices from a reduction in total demand by raising the interest rate.

3. The Introduction of the BBC exchange rate system in Korea

Even if Korea adopts a BBC system independently like Singapore without exchange rate coordination with other countries, it would be of great assistance for exchange rate stability of the won. It should establish a basket applying appropriate weights to currencies of major East Asian trading partners, the yen, dollar and euro, setting up wide bands around the basket, and allowing the exchange rate to crawl. A significantly wider band (i.e., ± 5 or $\pm 10\%$) than in the case of Singapore should be allowed. The exchange rate should be allowed to move outside of the band temporarily when the pressure from international speculative capital is significant, and then moved back within the band through governmental intervention in the market when the speculative forces weaken. The crawl should follow the method outlined in Section VI. The nominal effective exchange rate should crawl reflecting economic fundamentals and the difference between domestic and foreign unit labor cost indices. The BBC system could be executed in concert with an inflation targeting system.

The current floating exchange rate system in Korea is not sustainable as fluctuations are severe and the shocks on export enterprises are

severe. Stability of the effective exchange rate is important for the development of export enterprises with large-scale employment, and small and medium-sized manufacturing enterprises in particular. The bank rate must be allowed to fluctuate in accordance with the international bank rate in order to stabilize the exchange rate within a set band, and the government must abandon excessive efforts to control the bank rate. The call rate must be allowed to fluctuate elastically in accordance with the average rate of the policy bank rates of the U.S., Japan, the euro area, and Australia.

In June 2008 the policy interest rate of Korea is 3 percentage points higher than that of the USA, and the won has one percent premium on the one-year forward against the USD. The four percent profit in the arbitrage between the won and the USD is one of the major causes of large inflows of foreign capital and large increase of liquidity.

There is a need for the central bank to focus on exchange rate stability through prudent fiscal policy. There must be efforts to raise market confidence in economic policies through price stability, and strengthening of financial supervisory agencies and systems.

During periods of export slowdown and economic stagnation, rather than pursuing a depreciation of currency in order to increase export competitiveness, supply side policy instruments should be mobilized to decrease business costs such as production factor costs and tax rates. When there is an excessive amount of short-term capital inflows, capital controls and measures to promote capital outflows need to be mobilized.

4. Monitoring, mutual surveillance and resource sharing

With regard to economic cooperation in East Asia, cooperation in macroeconomic policy and cooperation for the reform and development of the finance sector have been discussed. In macroeconomic policy cooperation, there are tools such as information sharing (monitoring) and mutual surveillance of economic status and policy, the pooling and sharing of foreign exchange reserves, common exchange rate policy and adjustment of related policies. In currency and financial cooperation, monitoring and surveillance, liquidity support and exchange rate adjustment are most important as in the currency union of Europe.

Information sharing is the weakest form of economic cooperation. Economic information is collected and processed through a regional monitoring agency for use by nations in the region in order to aid in policy establishment. After the last financial crisis, the Asian Development Bank created the Regional Economic Monitoring Unit (REMU), collected major economic information, analyzed it and published it on its website as the Asia Economic Monitor.

A stronger form of information sharing is surveillance. In many types of forums, nations explain their economic status and policy intentions and hear the reactions of other nations. The form of information sharing in which participating nations can apply peer pressure and persuasion so that one nation's policy will not cause harm to other nations is mutual surveillance. There are no incentives given or fines imposed in order to change the policy of another nation. However,

each nation may take supplementary measures in order to manage economic crises arising in other regions. In addition, in order to aid nations at risk of economic crisis, each nation may provide technological support or demonstrate influence in the adjustment of their policies.

It has been pointed out that there were four problems with the surveillance system prior to the financial crisis (Giradin 2004): a lack of transparency due to the absence of information sharing, weakness of the applied surveillance model, bottlenecks in executing proposed policy in accordance with the surveillance, and the large scale fragility of the financial sectors. After the financial crisis, a trial of the East Asian surveillance system took place among APEC and ASEAN+3. The Manila Framework Group (MFG) was created under the jurisdiction of APEC in September 1997 in order to complement the global surveillance system established by the IMF and carry out the regional economy surveillance function. Technological support in order to strengthen the financial system was also one of its objectives. However, there was no objective or faculty for surveillance nor proposal for policy execution, and it ultimately became a forum for discussion of the regional and global outlook. Afterward, the ASEAN Surveillance Process and the ASEAN+3 Economic Review and Policy Dialogue Process were created.

The movement of capital was investigated, surveillance reports were composed, an early warning system was developed, major indices of economic change were composed, and major economic indices of ASEAN+3 were composed as well. However, major policy proposals in

the surveillance process were not accomplished and there were no agencies for the surveillance of the execution of proposed policies, and therefore the surveillance process was extremely weak. There must be an effective mutual surveillance function, abandoning the strong tradition of mutual noninterference in the internal affairs of other nations, before liquidity can be provided under the proper conditions. In Europe, exchange rate adjustment preceded financial cooperation (Girardin 2004). In Asia, both may be pursued together. The first thing that must be pursued in financial cooperation is the strengthening of structural adjustment of domestic financial systems, regulations, and supervisory agencies.

An even stronger form of economic cooperation is resource pooling, the sharing of foreign exchange reserves. This is the Chiang Mai Initiative (CMI). The CMI is a union of two agreements. One is an expansion of the ASEAN Swap Agreement and the other is the Bilateral Swap Agreements (BSAs) between ASEAN+3 member nations and repurchase agreements. The former was concluded by the original 5 ASEAN nations in 1977 and in May 2000, the 5 additional ASEAN nations were included and the initial amount of 200 million USD was increased by 1 billion USD. The latter is a system which supports liquidity through bilateral agreements by 8 nations. Subsequently, the Asian Bond Market Development Initiative (ABMI) was formed in order to nurture the Asian bond market as a complementary system. The regional bond market is fostered by integrating the bond markets of East Asian nations.

The withdrawal cap of the BSAs is decided through bilateral negotiations. In the BSAs, up to 10 percent of the maximum amount is permitted for automatic withdrawal. A nation withdrawing more than 10 percent must observe the IMF program for macroeconomic policy and structural adjustment.

However, the total available funds is merely 31.5 billion USD and when we take into consideration that the amount requested of the IMF by Thailand during the 1997 financial crisis was 17.2 billion USD, it is too small. The amount must be largely increased and there is a need for the CMI to be transformed into a system which does not depend on bilateral negotiations but is regulated multilaterally in a regional office which acts as a central agency. The regional financial agency complements the liquidity support available through international financial agencies such as the IMF, and in times of liquidity need, may provide liquidity more expediently and with more appropriate conditionality than international agencies (Girardin 2004). If monitoring of the regional economy, a reliable surveillance system, and an exchange rate coordination system are achieved, the liquidity support system will also be strengthened.

X. Conclusion

The economic dependence of East Asian nations is deepening and the economic instability caused by excessive flows of short-term capital due to capital liberalization and large differences in bank rates between nations persist. In addition, financial cooperation is necessary as a depreciation in one nation may bring about a drop in competitiveness as well as a crisis contagion effect to other nations in the region. In particular, the difference in bank rates between Japan and other advanced nations and between East Asian nations is significant and the exchange rate fluctuations of the yen are unpredictable, bringing about a great degree of hot money movement. In recent years, the economies of EMEAs have been upset by overvaluation of the exchange rates and high asset inflation caused by excessive inflows of short-term capital, including the yen-carry trade. If the current financial system is not reformed, it would be difficult to avoid a recurrence of the financial crisis caused by a subsequent sudden outflow of the excessive capital inflows.

If East Asian nations (ASEAN 6+3 and Taiwan, to start) choose a flexible BBC exchange rate system in collaboration, it will be a great help in achieving exchange rate stability. In stages in which it is difficult to collaborate in choosing this system, the BBC system will be of help in stabilizing the exchange rate even if nations choose the system individually as in the case of Singapore. The independent choice of a BBC system by Korea is also desirable. The dollar, yen, euro, and currencies of export competitive nations are included in the currency

basket and weights of the currencies in the basket are determined in accordance with their trade weights.

The basket system can be executed in the two-stage: first, participating countries of East Asia including Japan make a regional basket (ACU) and they link their exchange rates to ACU with bands, second, a regional agency links ACU to the basket of the dollar and euro. This system will stabilize effective exchange rates of East asian countries against their export competing countries and the dollar, yen and euro.

Wide bands are established, allowing for short-term exchange rate fluctuations. Government intervention is used to return the exchange rate within the band in order to gain market confidence to stabilize speculative forces. Exchange rate stability becomes easier if participating nations prepare a system which can sufficiently provide liquidity to nations at liquidity risk. When strong speculative forces cause the exchange rate to temporarily move outside the band, this may be accepted or the band may be increased, and when speculative pressures decrease, the government intervenes and moves the exchange rate within the band, thereby preventing financial crisis.

When the rate of increase of the unit labor cost index is faster than that of increase of price index, a real effective exchange rate based on the former better explains export competitiveness and therefore, should be reflected in the crawl of the exchange rate.

If the yen/dollar exchange rate is fixed within a set band, Japan may escape from a zero bank rate, expectations of a large exchange rate appreciation of the yen, and deflation expectations. East Asian nations

which jointly choose a BBC system can achieve exchange rate stability against the dollar and yen, and the inflow of short-term speculative capital decreases as the difference in bank rates decreases. In this alternative BBC system the ACU is linked or pegged to the basket of the dollar and yen, and the exchange rate of each country is linked to the ACU with a band. In this scheme the yen is included in the outside basket.

In achieving exchange rate stability, beyond choosing the most appropriate exchange rate system, it is more important to adopt consistent macroeconomic policy, strengthen financial agencies, regulations, and supervisory institutions, and gain market confidence in government policy in order to ensure the success of that system. Prudent financial and fiscal policy and transparency and precision of these policies are also important.

If the exchange rate is to be fixed within a band in nations which allow capital liberalization, the bank rate must change in accordance with the international bank rate because the capacity to control the domestic bank rate is extremely limited. The domestic bank rate is decided by a combination of the international bank rate and the rate of expected change of the won exchange rate. The policy bank rate must also change in accordance with the policy bank rate changes of major nations.

Exchange rate stability and prevention of financial crisis may also be attained through adjustment of the policy bank rates between nations.

In the case that there is an excessive inflow of short-term capital,

East Asian countries need to take capital controls since their financial institutions are relatively weak.

There is also a large margin for cooperation in using the foreign reserve surpluses of each nation. Through the creation of a joint fund, loans are readily available for nations experiencing a liquidity crisis and may prevent financial crises. Expanding the current BSAs or establishing an Asian Monetary Fund (AMF) would be of great help. Counterbalancing foreign capital inflows with active overseas investment in the manner of GIC (The Government of Singapore Investment Corporation) or Tamasec is also important.

There must be cooperation in order to increase regional investment and savings in the U.S. and cancel the international finance disequilibrium. If the investment rate in East Asia is increased and foreign reserves are well utilized through the increase of economic liberalization and reform, investment safety measures and incentives in order to increase regional investment, not only will the financial disequilibrium be cancelled, but it will also promote economic development. The idea of North East Asia Development Bank conforms to this objective. There are many sectors in need of investment, investment necessary to reform substructure (resource development, transportation, education and sanitation), strengthen economic agencies and systems, reduce pollution, and nurture market economy discipline.

Regional exchange rate cooperation brings related financial cooperation, and this goes a long way to strengthening economic cooperation, provision of trust, and promotion of regional peace.

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Appendix 1.

Correlation Between the Real Effective Exchange Rate and Export Volume in the Regression Equation

Exports (excluding food products)

LN XNF = -0.6566 LN(IUVX/IUVMW) -0.7921 LN(IUVX/

          (-2.0938)   (-2.7235)

      R^2/D-W=0.9981/1.4991 OLS

Seafood products exports

LN XMF=-1.0892 LN   +1.0914 LN GNPJ

         (-1.9386)   (2.2725)

          +0.5580 D75-24.1900

        (2.4366)   (-2.6345)

    R^2/D-W=0.9346/1.5365 C-O first order =0.7260

Food products imports (SITC 0, 1)

LN M01NP=-0.8830 LN -0.6133 LN INVG1

         (-1.4075)   (-2.3092)

       -1.6037 D645+17.2616

      (-4.6903)   (4.3537)

    R^2/D-W=0.9653/1.4305 C-O first order =0.8972

Raw materials imports (SITC 2, 4)

LN M24=-0.2583 LN+1.4876 LN GDP-4.9074

（-0.7764）   （6.8403）   （-2.3951）

R²/D-W=0.9689/1.8422 C-O first order =0.6351

Oil and related products imports (SITC 3)

LN M3=-0.3790 LN+2.1239 LN GNP-10.1236

（-2.7250）   （9.2229）   （-6.6991）

R²/D-W=0.9748/1.4488 C-O first order =0.4508

Manufactured products and other intermediate products imports (SITC 5-9)

LN M59=-1.4587 LN+2.3306 LN GNP-4.0883

（-3.1402）   （15.2748）   （-2.2363）

R²/D-W=0.9769/1.2749 OLS

Explanation of variables

EFM: Import effective exchange rate (Official exchange rate + per dollar duties income), won/$

EFX: Export effective exchange rate (Official exchange rate + per dollar subsidy), won/$

EX: Official exchange rate, won/$

GDP: Real gross domestic production, constant 1 billion won

GNP: Real gross national production, constant 1 billion won

GNPJ: Japan's real gross national production, constant 1 billion won

INVG1: Agricultural stock at t-1, constant 1 billion won

IUVMW: Global import unit cost index, 1975=100

IUVX: Korea's export unit cost index, 1975=100

M24: SITC 2,4 imports (raw materials), constant 1 million USD

PF: Food products wholesale price index, 1975=1.0

PFU: U.S. food products wholesale price index, 1975=1.0

PMF: Seafood products wholesale price index, 1975=1.0

PMFJ: Japan's seafood products wholesale price index, 1975=1.0

PNFM: 1975 Korea's non-food products wholesale price index, weighted average by import component ratio,   1975=1.0

PNFMW: 1975 Korea's import component ratio and non-food products wholesale price index, weighted average by import component ratio from the U.S. and Japan by year, 1975=1.0

PPM: Mineral fuel import price index, 1975=1.0

PRUJM: Simple average of the U.S. and Japan's raw material wholesale price index, 1975=1.0

PW: Wholesale price index, 1975=1.0

XMF: Seafood products exports, constant 1 million USD

XNF: Non-food products exports, constant 1 million USD

YW: Weighted average of the real GNP of trading partners (U.S. and Japan, similar weights), 1975=1.0

Source: Wang (1980).

Appendix 2.

Table A-1. Consumer Price Index (CPI)

	Indonesia	Singapore	Malaysia	U.K.	Philippines	Italy	Canada	France
1985	20.051	79.0996	64.546	55.551	32.48	52.681	66.02	72.47
1986	21.219	78.0035	65.022	57.455	32.724	55.735	68.78	74.31
1987	23.187	78.4117	65.211	59.839	33.965	58.373	71.78	76.76
1988	25.052	79.6061	66.878	62.775	36.941	61.357	74.67	78.83
1989	26.66	81.4732	68.759	67.67	40.851	65.175	78.4	81.59
1990	28.743	84.2928	70.559	74.082	46.031	69.409	82.13	84.34
1991	31.448	87.1804	73.634	78.419	54.543	73.782	86.74	87.06
1992	33.816	89.1534	77.145	81.346	59.23	77.53	88.05	89.12
1993	37.091	91.1944	79.873	82.619	63.306	81	89.67	90.99
1994	40.251	94.0215	82.848	84.665	68.6	84.262	89.84	92.51
1995	44.048	95.6392	85.707	87.553	73.2	88.681	91.79	94.15
1996	47.559	96.962	88.697	89.697	78.7	92.206	93.23	96.04
1997	50.522	98.9048	91.059	92.506	83.1	94.09	94.74	97.19
1998	80.02	98.6402	95.858	95.668	90.8	95.937	95.68	97.85
1999	96.415	98.6567	98.489	97.156	96.2	97.525	97.33	98.34
2000	100	100	100	100	100	100	100	100
2001	111.5	100.997	101.42	101.82	106.8	102.79	102.5	101.7
2002	124.75	100.602	103.25	103.49	110	105.32	104.8	103.6
2003	132.97	101.113	104.34	106.5	113.8	108.13	107.7	105.8
2004	141.27	102.794	105.86	109.66	120.6	110.52	109.7	108
2005	156.03	103.274	108.99	112.76	129.8	112.71	112.2	110
2006	176.49	104.268	112.93	116.36	137.9	115.07	114.4	111.8

Source: IMF, "International Financial Statistics."

	Korea	U.S.	Japan	China	Hong Kong	Germany	Australia
1985	46.796	62.486	86.151	29.576	41.411	73.517	54.8785
1986	48.083	63.647	86.681	31.499	42.878	73.422	59.864
1987	49.55	66.028	86.787	33.806	45.327	73.605	64.9456
1988	53.091	68.675	87.349	40.164	48.882	74.543	69.6424
1989	56.117	71.99	89.346	47.381	53.879	76.616	74.9069
1990	60.93	75.876	92.085	48.86	59.404	78.682	80.3544
1991	66.597	79.089	95.093	50.516	66.093	81.9	82.9439
1992	70.797	81.485	96.723	53.74	72.401	86.058	83.7617
1993	74.156	83.89	97.954	61.637	78.787	89.875	85.2804
1994	78.796	86.077	98.631	76.484	85.754	92.342	86.8964
1995	82.326	88.492	98.508	89.557	93.482	93.933	90.9268
1996	86.379	91.086	98.639	96.98	99.348	95.292	93.3022
1997	90.22	93.215	100.38	99.695	105.21	97.083	93.5358
1998	96.995	94.662	101.05	98.897	108.19	97.992	94.3341
1999	97.785	96.733	100.72	97.513	103.91	98.55	95.7165
2000	100	100	100	100	100	100	100
2001	104.07	102.83	99.242	104.63	98.417	101.98	104.381
2002	106.94	104.46	98.353	103.79	95.345	103.38	107.516
2003	110.7	106.83	98.109	105.42	92.924	104.46	110.495
2004	114.67	109.69	98.101	109.62	92.551	106.2	113.084
2005	117.83	113.41	97.832	111.62	93.389	108.28	116.102
2006	120.47	117.07	98.068	113.25	95.298	110.13	120.21

Source: IMF, "International Financial Statistics."

Table A-2. Unit Labor Cost Index (ULC)

	U.S.	Japan	Germany	U.K.	France	Italy	Canada	Korea
1985	100.44	49.318	54.724	59.202	79.624	70.353	94.2359	70.404
1986	103.51	72.904	76.772	70.041	105.33	94.009	97.5871	69.1
1987	99.781	83.236	98.294	82.72	127.12	111.67	104.558	76.271
1988	100.66	91.326	100.92	90.9	127.12	113.98	114.477	99.739
1989	102.96	85.478	95.801	86.094	120.85	115.05	122.386	115.78
1990	106.14	81.774	114.57	101.74	145.45	142.4	131.501	118.25
1991	108.77	89.474	114.83	108.38	143.1	148.85	141.019	128.03
1992	109.65	97.466	131.23	102.25	156.74	153.61	134.048	130.38
1993	108.88	112.38	130.31	87.219	150.94	123.81	121.18	135.85
1994	106.8	122.61	129.4	88.139	147.65	117.2	111.26	142.89
1995	104.93	128.36	151.97	93.865	158.78	117.05	111.796	164.93
1996	102.63	106.82	147.38	94.07	156.27	130.88	116.22	167.67
1997	101.1	85.575	123.1	101.02	131.35	121.66	111.662	137.29
1998	100	90.643	122.57	109	124.29	119.35	104.692	90.743
1999	99.013	100.49	117.32	107.46	117.55	116.28	102.547	96.48
2000	100	100	100	100	100	100	100	100
2001	101.32	91.813	97.375	95.808	98.119	100.61	101.072	90.874
2002	98.246	86.842	104.33	102.97	104.39	110.75	101.072	94.263
2003	98.904	85.867	123.36	112.17	123.35	139.78	117.694	97.001
2004	94.189	87.427	131.5	124.74	134.01	156.99	128.016	103.39
2005	95.395	85.185	126.12	126.28	132.45	161.75	137.802	113.17

Source: U.S. Department of Labor international statistics (http://data.bls.gov).

Table A-3. Trade Weights (Using CPI as the Price Index)

	U.S.	Japan	China	Hong Kong	Germany	Australia	Indonesia
1985	0.403	0.281	0.000	0.047	0.045	0.035	0.020
1986	0.401	0.319	0.000	0.041	0.048	0.032	0.012
1987	0.393	0.320	0.000	0.038	0.055	0.027	0.015
1988	0.388	0.316	0.000	0.047	0.050	0.030	0.015
1989	0.381	0.324	0.000	0.042	0.049	0.035	0.019
1990	0.362	0.310	0.000	0.044	0.061	0.035	0.027
1991	0.327	0.292	0.039	0.048	0.060	0.035	0.030
1992	0.316	0.269	0.055	0.058	0.057	0.036	0.037
1993	0.299	0.261	0.075	0.061	0.062	0.038	0.039
1994	0.292	0.269	0.081	0.060	0.065	0.035	0.037
1995	0.287	0.260	0.087	0.060	0.066	0.034	0.033
1996	0.279	0.238	0.100	0.062	0.060	0.041	0.036
1997	0.267	0.219	0.121	0.065	0.054	0.042	0.039
1998	0.288	0.193	0.122	0.065	0.049	0.049	0.032
1999	0.297	0.218	0.123	0.054	0.044	0.039	0.036
2000	0.288	0.225	0.134	0.051	0.042	0.037	0.038
2001	0.271	0.217	0.158	0.054	0.044	0.039	0.039
2002	0.256	0.206	0.188	0.054	0.045	0.038	0.036
2003	0.228	0.206	0.220	0.067	0.048	0.035	0.033
2004	0.218	0.206	0.240	0.065	0.051	0.033	0.030
2005	0.197	0.198	0.274	0.048	0.055	0.037	0.036
2006	0.183	0.184	0.302	0.049	0.049	0.035	0.038

Source: IMF, "Direction of Trade."

	Singapore	Malaysia	U.K.	Philippines	Italy	Canada	France	Total
1985	0.018	0.039	0.033	0.009	0.009	0.043	0.018	1
1986	0.015	0.022	0.031	0.006	0.012	0.038	0.024	1
1987	0.020	0.020	0.033	0.005	0.016	0.035	0.024	1
1988	0.022	0.020	0.033	0.006	0.016	0.033	0.025	1
1989	0.023	0.021	0.029	0.007	0.016	0.037	0.018	1
1990	0.027	0.023	0.030	0.008	0.019	0.032	0.023	1
1991	0.033	0.025	0.029	0.009	0.020	0.031	0.022	1
1992	0.043	0.025	0.028	0.009	0.019	0.028	0.021	1
1993	0.038	0.028	0.025	0.010	0.017	0.025	0.020	1
1994	0.040	0.024	0.024	0.011	0.019	0.023	0.020	1
1995	0.046	0.029	0.028	0.011	0.018	0.023	0.018	1
1996	0.045	0.037	0.031	0.013	0.020	0.020	0.017	1
1997	0.042	0.039	0.038	0.017	0.019	0.021	0.016	1
1998	0.038	0.039	0.039	0.024	0.018	0.023	0.018	1
1999	0.039	0.037	0.037	0.023	0.016	0.019	0.019	1
2000	0.040	0.036	0.034	0.022	0.015	0.019	0.017	1
2001	0.036	0.034	0.029	0.022	0.019	0.019	0.019	1
2002	0.035	0.033	0.031	0.022	0.021	0.019	0.017	1
2003	0.034	0.031	0.026	0.019	0.019	0.017	0.016	1
2004	0.031	0.031	0.028	0.017	0.018	0.017	0.016	1
2005	0.035	0.029	0.023	0.015	0.019	0.017	0.017	1
2006	0.044	0.030	0.020	0.014	0.017	0.019	0.017	1

Source: IMF, "Direction of Trade."

Table A-4. Trade Weight (Using ULC as the Price Index)

	U.S.	Japan	Germany	U.K.	France	Italy	Canada	Total
1985	0.484	0.3378	0.054	0.0397	0.0212	0.0113	0.05199	1
1986	0.4588	0.3652	0.0551	0.0349	0.028	0.0141	0.04386	1
1987	0.4491	0.3656	0.0629	0.0372	0.0275	0.018	0.03968	1
1988	0.4509	0.3674	0.0586	0.038	0.0291	0.0181	0.03809	1
1989	0.4457	0.3792	0.0578	0.0335	0.0216	0.0187	0.04352	1
1990	0.4322	0.3709	0.0729	0.0354	0.0279	0.0228	0.03798	1
1991	0.4186	0.3736	0.0769	0.0371	0.0286	0.0253	0.03995	1
1992	0.4285	0.3649	0.0778	0.0374	0.0279	0.0261	0.03739	1
1993	0.4214	0.3679	0.0879	0.0357	0.028	0.0233	0.03576	1
1994	0.4104	0.3775	0.0919	0.0334	0.0277	0.0263	0.03293	1
1995	0.4101	0.3718	0.094	0.0394	0.0259	0.0259	0.03291	1
1996	0.4185	0.3577	0.0905	0.0471	0.0262	0.0302	0.02975	1
1997	0.4206	0.3457	0.0857	0.0596	0.025	0.0293	0.03337	1
1998	0.4578	0.3063	0.0777	0.0627	0.029	0.0292	0.03719	1
1999	0.457	0.3352	0.0671	0.0576	0.0295	0.0248	0.02875	1
2000	0.4497	0.3505	0.0655	0.0533	0.0268	0.0238	0.03039	1
2001	0.4374	0.3508	0.0715	0.0475	0.03	0.0313	0.03137	1
2002	0.4313	0.3462	0.0751	0.0515	0.0292	0.0346	0.03221	1
2003	0.4072	0.368	0.0853	0.0467	0.0277	0.034	0.03119	1
2004	0.394	0.3716	0.0921	0.051	0.0285	0.0324	0.03051	1
2005	0.3756	0.3763	0.1043	0.0441	0.0315	0.0368	0.03143	1
2006	0.3743	0.3767	0.0998	0.0411	0.0355	0.0346	0.03802	1

Source: IMF, "Direction of Trade."

Table A-5. Exchange Rate (Against the USD)

	Korea	Japan	China	Hong Kong	Germany	Australia	Indonesia
1985	870.02	238.54	2.9367	7.7908	2.944	1.43189	1110.6
1986	881.45	168.52	3.4528	7.8033	2.1715	1.49597	1282.6
1987	822.57	144.64	3.7221	7.7983	1.7974	1.42818	1643.9
1988	731.47	128.15	3.7221	7.806	1.7562	1.27991	1685.7
1989	671.46	137.96	3.7651	7.7999	1.88	1.2646	1770.1
1990	707.76	144.79	4.7832	7.7898	1.6157	1.28106	1842.8
1991	733.35	134.71	5.3234	7.7712	1.6595	1.28376	1950.3
1992	780.65	126.65	5.5146	7.7406	1.5617	1.36165	2029.9
1993	802.67	111.2	5.762	7.7356	1.6533	1.47056	2087.1
1994	803.45	102.21	8.6187	7.7284	1.6228	1.36775	2160.8
1995	771.27	94.06	8.3514	7.7358	1.4331	1.34903	2248.6
1996	804.45	108.78	8.3142	7.7343	1.5048	1.27786	2342.3
1997	951.29	120.99	8.2898	7.7421	1.7341	1.34738	2909.4
1998	1401.4	130.91	8.279	7.7453	1.7597	1.59183	10014
1999	1188.8	113.91	8.2783	7.7575	0.9386	1.54995	7855.2
2000	1131	107.77	8.2785	7.7912	1.0854	1.72483	8421.8
2001	1291	121.53	8.2771	7.7988	1.1175	1.93344	10261
2002	1251.1	125.39	8.277	7.7989	1.0626	1.84056	9311.2
2003	1191.6	115.93	8.277	7.7868	0.886	1.54191	8577.1
2004	1145.3	108.19	8.2768	7.788	0.8054	1.35975	8938.9
2005	1024.1	110.22	8.1943	7.7773	0.8041	1.30947	9704.7
2006	954.79	116.3	7.9734	7.7678	0.7971	1.32797	9159.3

Source: IMF, "International Financial Statistics."

	Singapore	Malaysia	U.K.	Phillipines	Italy	Canada	France
1985	2.20015	2.483	0.7792	18.607	1909.4	1.365	8.985
1986	2.17742	2.5814	0.6822	20.386	1490.8	1.39	6.926
1987	2.10598	2.5196	0.6119	20.568	1296.1	1.326	6.011
1988	2.01242	2.6188	0.5622	21.095	1301.6	1.231	5.957
1989	1.95026	2.7088	0.6112	21.737	1372.1	1.184	6.38
1990	1.81253	2.7049	0.5632	24.311	1198.1	1.167	5.445
1991	1.72755	2.7501	0.567	27.479	1240.6	1.146	5.642
1992	1.62897	2.5474	0.5698	25.513	1232.4	1.209	5.294
1993	1.61579	2.5741	0.6668	27.12	1573.7	1.29	5.663
1994	1.52744	2.6243	0.6534	26.417	1612.4	1.366	5.552
1995	1.41738	2.5044	0.6337	25.715	1628.9	1.372	4.991
1996	1.41004	2.5159	0.641	26.216	1543	1.363	5.116
1997	1.48481	2.8132	0.6108	29.471	1703.1	1.385	5.837
1998	1.6736	3.9244	0.6038	40.893	1736.2	1.483	5.9
1999	1.69496	3.8	0.6181	39.089	0.9386	1.486	0.9386
2000	1.72396	3.8	0.6609	44.192	1.0854	1.485	1.0854
2001	1.79172	3.8	0.6947	50.993	1.1175	1.549	1.1175
2002	1.79059	3.8	0.6672	51.604	1.0626	1.569	1.0626
2003	1.74218	3.8	0.6125	54.203	0.886	1.401	0.886
2004	1.69023	3.8	0.5462	56.04	0.8054	1.301	0.8054
2005	1.6644	3.7871	0.55	55.086	0.8041	1.212	0.8041
2006	1.58898	3.6682	0.5435	51.314	0.7971	1.134	0.7971

Notes: 1) The euro exchange rate applies to Germany, France, the U.K., and Italy
after 1.

2) Mid-year exchange rate 999.

Table A-6. NEER, REER, and Relative Price and Unit Labor Cost Indexes (Year = 100)

	NEER	REER (CPI)	REER (ULC)	RCPI	RULC
1985	57.40357	87.7075494	107.006084	66.719	55.004
1986	67.46302	101.078417	127.306868	67.369	53.542
1987	68.10567	101.842355	123.149098	67.771	55.940
1988	63.97572	91.5503414	99.0992542	70.524	65.359
1989	56.92039	80.2441836	84.4774105	71.679	68.154
1990	60.02082	82.1322034	85.3551756	74.455	71.473
1991	64.43886	83.2457049	82.8875678	78.386	78.756
1992	70.19448	87.7642109	85.0384591	81.146	83.803
1993	73.61787	90.1880316	84.0298204	83.034	89.064
1994	76.42641	89.7756054	81.8214877	86.582	95.119
1995	76.40603	87.4948748	73.0338931	88.785	106.402
1996	75.79406	84.2773051	67.3595913	91.511	114.413
1997	84.82144	91.5475638	76.9564975	94.088	111.803
1998	120.6437	123.041084	113.082346	99.868	108.584
1999	106.5734	105.452245	105.273307	99.614	99.768
2000	100	100	100	100	100
2001	108.1675	106.415111	107.351045	102.573	101.685
2002	104.9012	102.967824	103.037805	104.569	104.526
2003	106.6973	101.131668	103.028183	107.092	105.090
2004	108.2369	99.3572098	96.8586057	109.210	111.947
2005	96.36134	88.2493241	91.8018334	110.211	109.800
2006	88.98497	80.7543621	-	110.796	-

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Flexible BBC Exchange Rate System and Exchange Rate Cooperation in East Asia

Yen Kyun Wang

In order to prevent competitive depreciations, excessive inflows of foreign capital and crisis contagion in the region, cooperation in exchange rate and monetary policy is very desirable, considering the fact that countries in East Asia have high trade dependence among them and similar trade patterns with each other.

The BBC system proposed will be examined and the new BBC system will be suggested.

The BBC system is desirable as a new exchange rate system in Korea. Singapore has been successful with the BBC system since the early 1980s. It would be more desirable that East Asia adopt the flexible BBC (basket, band, crawl) exchange rate system jointly. Participating countries of East Asia including Japan link their exchange rates to their currency basket (ACU) with bands and the ACU is linked to the basket of the dollar and euro by a regional agency. It will stabilize real effective exchange rates of East Asian countries and reduce excessive short term capital flows into developing East Asian countries.

In addition to the above flexible BBC exchange rate system the U.S. and Japan can fix the yen/dollar exchange rate within a band in the short- and medium-run and fix the rate in the long-term. It will further reduce excessive capital inflows into developing countries in the region. Without stabilizing the yen/dollar exchange rate, interest rates of Japan will continue to be lower than those of the U.S. and emerging East Asian countries, and yen-carry trade and excessive capital inflows in developing East Asia will appear when the expected exchange rate of the yen is uncertain or weak. And sudden outflow of short-term capital will follow later. The ACU is linked to the basket of the dollar and yen, and participating countries in the region link their exchange rates to the ACU with bands. The yen is included in the outside basket, but not in the regional basket in this alternative scheme. This scheme will stabilize exchange rates of emerging East Asian countries against the yen and dollar more effectively.

When they crawl their central rates within bands, real effective exchange rates (REERs) using unit labor cost indices need to be used to keep their export competitiveness constant.

Sound and consistent economic policies are essential for success of the BBC system. Singapore experiences with the BBC system provide good lessons. Prudential fiscal policy, flexible prices of goods and productive factors, proper interest policy and effective use of foreign reserves are needed. Joint or independent capital control could be helpful in the face of excessive capital inflows. Other measures for financial cooperation are discussed also.